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Editorial

IS THE UNIVERSITY OF ILLINOIS INTENDING TO ENTER INTO THE PRACTICE OF MEDICINE?

At the second special session of the Fifty-fifth Illinois Central Assembly in 1928 there was introduced by Thomas Curran what was known as House Bill No. 2 and that seemingly was an attempt at state participation in the practice of medicine, through the medium of the University of Illinois' control of all hospitals in the state.

Such power, if vested in this tax-supported university or in any similar institution anywhere, will effect the greatest menace against the future of medical practice not only for the United States but for civilization.

Judge for yourself the threat contained in the bill through its exquisite evasions. Harmless enough on the face of things the bill when dissected proves to have the virulency of an adder. You have to feel the sting to know that the fang is there.

It will be noted from perusing the bill as printed below that this bill turns over the group hospitals on Polk street, Chicago, to the University of Illinois from the Department of Public Welfare.

For those unfamiliar with conditions it may not be amiss to set forth a few conditions as now existent.

"Under the Lowden administration with Thorne as Director, the University of Illinois was unable to get an appropriation to do this work so Thorne requested an appropriation of $3,000,000 from the legislature to erect this building which was then to be used by the different State Departments and also by the University of Illinois. Thorne entered into an agreement with the University of Illinois by which they were to complete the buildings, appoint all employees, make all regulations and the Welfare Department to pay the bills.

"At the present time there is housed in and

working from this building the University of Illinois Medical School, the Department of Health; Doctor Adler Institute; and the head of the research for Mental diseases which used to be headed by Dr. Singer. The last eight years the Department of Public Welfare under Judge Jenkins and his successor Mr. Ide have resisted all efforts of the University to manage and control this group of hospital buildings while giving them every aid and facility which they requested for caring for about 150 patients and all other teaching facilities necessary to the medical school.

"It is against public interest that the University control these buildings, for in that case they are responsible to nobody but the Trustees, and representatives of the people—the legislature—will have nothing to say. The Board of Trustees have always been a carefully selected group who are amenable to the Alumnae Association and dominated almost by the teaching group who were on the payroll of the University.

"State medicine will prevail in Illinois with a rush, for the University has everything to say in this if this control business goes through."

The following is the Bill:

Second Special Session, 55th G. A.
HOUSE BILL NO. 2

1 Introduced by Mr. Curran, May 15, 1928.
2 Read by title, ordered printed and referred to Committee on Appropriations.

A BILL

For an Act conveying the Research and Educational Hospital to the Board of Trustees of the University of Illinois and providing for its maintenance and operation.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

SECTION 1. All the right, title and interest of the State of Illinois in and to the land, buildings, and equipment of the Research and Educational Hospital (sometimes called the Central Group Hospital), situated in the city of Chicago, county of Cook and State of Illinois is hereby granted, quit-claimed and conveyed to the Board of Trustees of the University of Illinois. A patent shall be issued under the Great Seal of the State of Illinois, by the Governor and Secretary of State, conveying to the Board of Trustees of the University of Illinois, the property described in this Act.

This institution shall, thereafter, be maintained and operated by the University of Illinois for the study and teaching of the causation, prevention, alleviation and cure of diseases and the promotion of public welfare.

Sec. 2. The sum of $497,000.00, or so much thereof as may be necessary, is appropriated to the University of Illinois for the maintenance and operation of the Research and Educational Hospital until the expiration of the first fiscal quarter after the next regular session of the General Assembly.

Sec. 2. The appropriation herein is subject to the provisions of "An Act in relation to State Finance," approved June 10, 1919, as amended.

GOVERNMENT MEDICINE

IF SOCIALISM CAN BE APPLIED TO THE MEDICAL PROFESSION, IT CAN BE APPLIED TO OTHER PROFESSIONS AND TO BUSINESS IN GENERAL

GOVERNMENT BREAD, GOVERNMENT PILLS, GOVERNMENT CLOTHES, GOVERNMENT SHOES OUT OF THE SAME BAG

One of the recognized financial and commercial periodicals of the country, *The Chicago Journal of Commerce,* makes this editorial comment, under date of June 28, 1928, on the preparatory activities of the Children's Bureau of the Department of Labor as to the proposed extension of the Sheppard-Towner act.

When a periodical of this class in the lay press takes so decided an attitude upon so critical a question does it not behoove the more indolent of the medical profession to convince themselves that the editorial columns of the ILLINOIS MEDICAL JOURNAL do not exaggerate the current crisis in medical economics?

"The children's bureau of the department of labor is now preparing its campaign for a renewed extension of the Sheppard-Towner government medicine act, the authorized apropriations for which will expire June 30, 1929. At the next session of congress a drive will be made for renewed appropriations.

"It is the purpose of the paternalists and bureaucrats to make the Sheppard-Towner government medicine act a permanent piece of legislation, and to keep the federal government forever in the business of paying money to the states for local medical and nursing work.

"The Sheppard-Towner act is called a "maternity and infancy act." It has been represented as an invaluable aid to mothers in childbirth, and to infants under 1 year of age.

"But in fact the operations of this law are not limited in this fashion. Instead they cover a

large part of the general field of medicine and medical research. The Sheppard-Towner act is the formidable beginning of a comprehensive system of government medicine.

"For the fiscal year 1927 the federal government paid to the state of Kentucky the salaries of a state health officer, a health director, an assistant director, a clinical instructor, a chemist for water and milk supply, an inspector of birth registration, an educational instructor, a stenographer, a bookkeeper, and six clerks.

"In Georgia the federal government paid for the distribution of free diphtheria toxin-antitoxin to clinics for the immunization of children under 7 years of age. This was a highly valuable work. But it certainly violated the promise that the Sheppard-Towner act would be used only for the benefit of mothers in childbirth and of children under the age of 1 year.

"In Colorado the federal government paid for what has been described as 'special work' with the boys' and girls' clubs at the state fair.

"In California the federal government paid for the distribution of pamphlets dealing with tonsils and adenoids.

"In Iowa the federal government paid for dentists and nurses in dental conferences and clinics for children up to 7 years of age.

"In Maryland the federal government paid for a survey of crippled children.

"In New York the federal government paid for an orthopedic clinic, consisting of a traveling unit comprising two orthopedic surgeons, eleven field nurses, and one muscle-tester.

"These are only a few of numerous items showing the extent to which the federal government's money, under the Sheppard-Towner act, is being employed not only to lessen the deaths 'connected with childbirth, and among infants under 1 year of age,' which is the professed purpose of the act, but for health work among children in general, including educational work in boys' and girls' clubs.

"What is being done in the case of children can readily be done in the case of adults. A bureaucracy tends to exalt itself by extending its power. The Sheppard-Towner act is the well-defined beginning of a general system of federal government medicine. It is paternalistic, it is bureaucratic, and in sober truth it is socialistic.

"If socialism can be applied to the medical profession, it can be applied to other professions and to business in general.

"When the proposal for another extension of Sheppard-Towner appropriations is made at the next session of congress, it ought to be defeated. It probably will not be. Masked socialism is not encountering many defeats in the United States. It is winning again and again, because business is asleep."

WOMEN FLAY FEMINIST BLOC AND CHILDREN'S BUREAU WOMEN AROUSED TO FIGHT ANTI-HOME LEGISLATION DIRECTLY AFFECTING THEMSELVES AND THEIR CHILDREN

Feminist Bloc and Children's Bureau Resented by Thousands of American Citizens Who Understand Sinister Effects of This Bureaucracy

A cry for help, gathering force as the incoming tides and surging against national legislators, is coming from intelligent women who realize what misdirected federal power can do through meddlesome interference in local affairs. The age old slogan in time of disaster, "Women and Children First," has been so perverted and stood on end by malign interpretation as to cause protest against this nefariousness to be heard on every side.

To the revolutionary socialists trying to undermine the government of the only democracy that has proven successful, the cry "Women and Children First" means that this group is the target for the first attacks of insidious inroads. Through the children's bureau of the department of labor and its sustaining feminist bloc, instead of a shout of heroism, the cry "Women and Children First" has become the password for bureaucratic rapine and destruction.

Rebellion against this nauseous and poisonous dose meted out to them by their sisters is gathering force not only among such strong national patriotic organizations as the Daughters of the American Revolution and the Daughters of 1812 but among civic and economic organizations of women. Not only do many of these organizations such as the Daughters of the American Revolution, the Daughters of 1812, the Women's Constitutional League of Maryland, the North

Carolina D. A. R., the Maryland D. A. R., the New Jersey Society Daughters of the American Revolution, Sentinels of the Republic, the Woman's Constitutional League of Virginia, the National Society Daughters of the American Revolution, American War Mothers, Massachusetts Public Interest League, and scores of others protest against the extension of the Federal maternity act subsequent to its repeal, effective June 30, 1929, but all of them ask for the abolishment of the Federal Children's Bureau and for the suppresion of any efforts towards the foundation of a federal department of education. The text of the whole rebellion is the reduction of federal bureaucracy.

Rebels from all parties and from non-partisan leagues who object to this federal arrogation of private rights for the benefit of a feminist bloc have been put to it as to how best to combat the growing menace. One of the first associations to thrown down the gauntlet boldly is the federation of Democratic women of Baltimore. Their appeal has been sent to each Democratic member of Congress.

DEMOCRATIC WOMEN FLAY FEMINIST BLOC AND CHILDREN'S BUREAU

The Federation of Democratic Women, of Baltimore, has appealed to every Democrat in Congress to resist and reduce Federal bureaucracy; to oppose any expansion of Federal power in local affairs; to work and vote against a Federal Department of Education, or any revival of the Federal Maternity Act (which was repealed by the last Congress to take effect June 30, 1929); and in particular to abolish the Federal Children's Bureau. The full text of the appeal follows:

FEDERATION OF DEMOCRATIC WOMEN OF BALTIMORE, INC.
18 W. Saratoga Street, Baltimore, Md.

January 14, 1928.

To the Democratic Members of
The Congress of the United States.

HON. ————

Dear Sir:

We are an association of straight women Democrats, politically organized, and working shoulder to shoulder with our party men for Democratic candidates, the Democratic Party and Democratic principles. We are alarmed at mounting Federal power and bureaucracy, intolerable to a liberty-loving, self-reliant people. Therefore, it was resolved at the Federation's December meeting most respectfully to appeal to every Democrat in the national law-making body to resist and reduce these interlocked dangers which were the very grievances of the American colonists against the British Parliament in 1776, for they complained about the erection of a "multitude of new offices" and "swarms of officers to harass our people and eat out their substance." We believe we are threatened by a like menace and respectfully urge you to vote against any expansion of the Federal power such as the creation of new departments, bureaus, commissions, boards and divisions, and also to strive to curtail this power by resisting all further interference with the rights of the States and with local self-government.

We wish to point out that there is danger in invasions of the private lives of citizens, however sentimentalized and disguised as Public Welfare (in outright perversion of that term's restricted meaning as used in the Constitution) and that the Federal Government transcends its powers when it meddles in the most intimate domestic relations, and attempts to interfere with the parental authority of fathers and mothers over their children. In submitting to such a system American citizens surrender their ancient Right of Castle, guaranteed them under our Constitution.

We are indignant at the group of bills and amendments being foisted on the Congress as "women's measures" by the little inner ring of interlocked executives of feminist organizations, known as the "Women's Joint Congressional Committee." It in no way represents women in general and we who are aligned with men along legitimate party lines, contend that non-partisan political organization along sex lines is disruptive of both government and society. Such an organization can only be used for illegitimate pressure work. They are organized to mislead Congress and misrepresent women and we dissociate ourselves completely from this feminist bloc.

We wish to point out that the feminist agency in government most obnoxious to the rank and file of normal women is the Children's Bureau in the Federal Department of Labor, which, since its establishment, has been a storm center. Its "expanding program" for establishing a dictatorship over women and children has resulted in two unconstitutional Federal child labor laws, the Federal Maternity Act, the pending Federal "Child" Labor Amendment, and a constant stream of communistic propaganda from that Bureau to nationalize and standardize the care of mothers, babies and youth, compared by these bureaucrats of the Children's Bureau to the supervision exercised by the Bureau of Animal Industry in the Department of Agriculture which deals with the breeding, care and feeding of hogs, cattle and sheep for slaughter.

The "Child" Labor Amendment launched by this Bureau (deliberately to circumvent two decisions of the Supreme Court, 247 U. S. 251; U. S. 20) contained, as stated by Senator Reed of Missouri:

"An entirely new power, that the Federal Government never possessed, that no State ever possessed. . . . No State possesses the power under the principles of the common law. . . . No State today, no government today, where flies the American Flag, not the Federal Government, not an individual State, not a combination of all of them today can take away arbitrarily from the human being the right to

earn his living. . . . Never before was there ever heard of . . . a proposition so monstrous that was brought before any legislative body in any country. . . .

"It is not a child labor amendment; it is revolution. It is the creation of a new, a great despotic power in the Federal Government." *(Cong. Record,* June 2, 1924.)

This miscalled "Child" Labor Amendment was driven through Congress swathed in sentiment. In the exposure of the ratification campaign (on which the States stand 36 to 5 for rejection) the Amendment was shown to be on the one hand, an attempt to eliminate youthful competition in labor, and on the other hand an attempt at communistic control and maintenance of the youth of the nation up to 18 years by the Federal Government, with a raising scale (Sec. 2) of a hoped for 21-year limit in the States—a power not asserted by any government today save that of Soviet Russia, and not even there exercised.

It is the drive of this Bureau for this despotic power that is responsible for the cleavage between the rank and file of normal women and the feminist bloc, co-operating with the Children's Bureau.

We resent the assumption of a protectorate over women and children by a Federal Bureau, and the implication that we are, like the Indians, "wards of the government."

Even the President of the United States appears to hold this theory of benevolent despotism. He says:

"The welfare of women and children is being especially guarded by our Department of Labor. Its Children's Bureau is in co-operation with 26 State Boards and 80 juvenile courts." (Annual Message, 1927.)

This assertion is only to be matched by the claim of Miss Grace Abbott, Chief of the Children's Bureau.

"The Children's Bureau has the whole field of child welfare and child care." (Proceedings, Women's Trade Union League, Waukegan, Ill., June 5-10, 1922, p. 90, address by Miss Abbott.)

In close co-operation with the Joint Congressional Committee, the Children's Bureau chief, in violation of civil service ethics, operates politically. She formulates legislation both State and Federal, boasts of her "legislative technique" and teaches and leads what she calls "the final assault upon the Legislature or the Congress."

It is precisely the program of this Children's Bureau for a revolutionary "full grant of power," as Miss Abbott called it (House Child Labor Hearings, 1924, p. 35), over our homes, schools and children (including youth up to 18 years) by constitutional amendment, that the States and the people have *"especially guarded"* against in rejecting that amendment by 36 to 5!

We beg you to remember that neither party owes the feminist bloc—the chief supporter of this Bureau and these "welfare" measures—anything whatever. The feminist bloc threatens and wheedles, but never supports any candidate or any party. It is organized, instead, to "bore from within" the legitimate parties, and to get women to betray their parties, from the inside for the benefit of feminist bloc measures.

For example, in its campaign bulletin for May, 1920, the National League of Women Voters instructed its members:

"GET INTO THE PARTIES . . . Democratic women, you need the help of your Republican sisters. Republican women, you will succeed only if you join hands with the Democratic women, working from within. Neither side could win without the other, but by teamwork in behalf of the legislative measures in which women believe, the League of Women Voters will become invincible."

Observe that women members of this organization were not urged to enter the parties for the parties—but as party snoopers, spies and traitors to make this non-partisan League of Women Voters "invincible".

There is room in the Democratic Party for every woman Democrat. There is room in the Republican Party for every woman Republican. But there should be no room in either party for the "50-50" woman voter, "working from within" with women of the opposite party on behalf of an outside league of no party!

Finally, we urge you to vote against a Federal Department of Education; against any bill to replace the Maternity and Infancy Act, repealed by the last Congress to take effect June 30, 1929; and against the so-called "Equal Rights" Amendment of the National Woman's Party—another would-be political monopolist of an entire sex—and to repeal the Act of April 9, 1912, establishing the Children's Bureau.

There is no excuse for the existence of that bureau. Every possible legitimate interest the Federal Government can have in the education, health, enumeration, or labor of children is limited by the Constitution to gathering of facts and statistics under the Census clause and its implied powers, and can be and is being exercised by the Federal Bureau of Education, the Federal Division of Vital Statistics (which reports infant, maternal and other mortality, births, etc.), the United States Public Health Service, and the Bureau of Labor Statistics. Four distinct Federal bureaus can and do cover every statistical fact concerning children that the Federal Government has a right to gather or disseminate.

Therefore, we most earnestly urge every Democrat in Congress to work and vote for the abolition of this fifth-wheel on the Federal system, called a "Children's Bureau," which, in insolent defiance of the Constitution, and the Supreme Court, has waged political campaigns to secure national control of children, and in its last Annual Report indicates that it has no respect for the overwhelming action of the people in rejecting the "Child" Labor Amendment, and considers the action of the last Congress in repealing the Maternity Act of little or no consequence!

Respectfully submitted,

(Signed) MRS. MORTIMER W. WEST,

President.

EDUCATIONAL COMMITTEE ACHIEVES WONDERFUL RESULTS

Results of the past few years prove how ably the Educational Committee of the Illinois State Medical Society has filled a long-standing but hitherto comparatively unrecognized need.

Efforts of this Committee have been a potent influence toward abolishing that misunderstanding of the aims and achievements of scientific medicine that has enabled skilfully disguised socialistic medicine to burden the citizens of the state with inimical legislation. The work has only begun, but since the Educational Committee has been able to interest and gain the support of many influential educational, commercial and civic organizations, the ultimate success of its program seems daily more probable.

That Sheppard-Towner cooperative legislation was not introduced during the last two sessions of the Illinois General Assembly was largely due to the labors of the Educational Committee; that the examinations of preschool children are to be conducted in physicians' offices and not in clinics, as was the original intention of sponsors of the examinations; that future clinics for crippled children conducted throughout the state by Rotarians will be held only after conference with and approval by local county medical societies; that the physical examinations of girls in the 4-H clubs of various Home Bureau units will hereafter be held in doctors' offices and not in clinics, are but a few of the specific achievements of the Committee.

Among organizations and agencies which have cooperated with the Educational Committee in extending a better understanding of the ideals of scientific medicine, or to which the Committee has extended service, must be mentioned the following: Illinois Federation of Women's Clubs, Illinois Federation of Colored Women's Clubs, Illinois Council of Parent-Teacher Associations, Business and Professional Women's Clubs of Illinois, Illinois Home Bureau Federation, Home Economics Extension Service, University of Illinois; Illinois Conference on Public Welfare; Illinois Department of Public Health; Woman's Auxiliary of the Illinois State Medical Society, Illinois State Dental Society, Chicago Council of Jewish Women, Jewish People's Institute, Chicago Woman's Aid, Chicago Urban League, Chicago Department of Health, Chicago Dental Society, Chicago Commons Association, Onward Neighborhood House, Chicago High Schools, Lions Clubs, Rotary Clubs, Kiwanis Clubs, Optimist Clubs, Exchange Clubs, Teachers' Institutes, Young Men's Christian Association (Industrial, Railroad and Colored Branches, Physical Education Departments), Young Women's Christian Association, Boy Scouts, Campfire Girls, Mandel Brothers, Sears, Roebuck & Co., Wieboldt Stores, Boston Store (for National Baby Week), Chicago Medical Society (branch societies), numerous manufacturing plants and industries of Chicago.

Through the Scientific Service Committee, functioning as a sub-committee of the Educational Committee, scientific material of post-graduate nature has been made available to very county medical society in the state.

During the year just ended, the Educational Committee scheduled 640 speakers, exclusive of speakers detailed by the Scientific Service Committee. Eight thousand five hundred articles of a health education nature were released by the Committee for publication in Illinois newspapers, and 96 radio talks were given under its sponsorship.

FARM RELIEF FROM THE MEDICAL STANDPOINT

SHORTAGE OF PHYSICIANS AS WELL AS CROP SITUATION MATTER OF CONCERN TO THE NATION'S AGRICULTURISTS AS INCREASING DEARTH OF GENERAL PRACTITIONERS PLACES UNLOOKED FOR CONSEQUENCES UPON SHOULDERS OF NATIONAL FARM AND SUBURBAN POPULATION.

Decreasing and minimum profits from his tilling of the soil has made the American farmer an anxious faced watcher in legislative and convention halls. Added to his alarm lest he fail to "break even" has come another and more vital solicitude. For the agriculturist has lost his "medicine man." Swept under the flood of specialists and high-priced M. D.'s who have paid so much for their medical education that they simply must realize upon their expended time and cash to an extent that country practice to them is at all angles "Verboten," the farmer finds himself minus a physician.

Expert students of the situation claim that the only solution lies in the American Medical Association's repossession of the control of medical education, now virtually passed from the hands of this parent organization.

With matters re-righted in this direction, certainly some middle ground can be agreed upon. An economic axiom beyond dispute is that increase in cost means invariably decrease in consumption. As the cost of the license and equipment to practice medicine increases, there is an equally decreasing number of persons able to purchase a necessity that by its inherent qualities and excellence has become a luxury.

Ethical medicine holds that no man can be too well qualified as a practitioner, and yet some bridge must be made between the horns of a dilemma that has become almost intolerable. Surely some means can be discovered by which reasonable medical service at a reasonable cost can be fairly dispensed to the overpowering number of rural districts that are now either destitute of any medical service whatsoever, or dependent upon that questionable treatment received at the hands of state nurses, semi-lay community centers, or worse yet, veritable quacks and charlatans.

Long before William Allen Pusey issued his excellent brochure on "The Disappearance of Doctors from Small Towns," the National Grange, an association of farmers from all over the country, had discovered this deficit, verily as grave a one as the hole in the ledger account. The memorial addressed by the National Grange under date of Dec. 5, 1927, to the House of Delegates of the A. M. A. is reproduced elsewhere in this issue. Careful reading of this virile document discloses that these men and the communities represented by them knew even better than did Dr. Pusey, and by first hand knowledge, too, the sinister significance of the statement, "One-third of the towns in the United States of a population of 1,000 or less and who had doctors in 1914 are now without them."

A physician must be controlled by economic values since medicine is not an endowed profession. A large percentage of the 800,000 members of the National Grange come under the ban of these towns of "1,000 or less" for ethical medical facilities. Where there is no ethical physician there is a fat field for the resident charlatan or the mail-order quack. Town population has no effect upon vital statistics in the matter of health, birth or death. A man can be as sick in a town of 300 persons as he is in London, or New York, or Paris.

The question would really seem to be up to the doctors. And of national, even international import is the fashion in which the doctors will reply to the query of "What are you going to do about it?"

State medicine is not the answer. England, Germany, other continental countries who have tried this pompous evil, find that like the men from whom the devils were cast out, "the last state is even worse than the first."

Endowed foundations also fail in the verities. This would be the literal delivering up into the hands of the laity of the entire practice of medicine in the rural communities with those disastrous results that are the inevitable sequalae of the lay dictation of any of the scientific professions, and most of all, of the science of medicine.

Harry A. Caton, master of the Ohio State Grange, has declared that the specialist, taking care of about ten per cent. of rural medical cases has sounded the knell of the old fashioned practitioner and country doctor. Unfortunately, the concentrated skill of this specialist has not sounded the knell for rural illness.

Just as it is manifestly unfair for the physicians of the country to expect rural communities to do without medical service, "to be medically helpless," as has been well phrased, just so it is manifestly unfair to expect a man to spend from $15,000 to $20,000 in securing a medical education that it takes him the first 25 or 26 years of his life to obtain, and then to expect his economic return from a starveling rural community. The bridge of justice would seem to be plausible if constructed, not from any lowered medical standard, but from a lowered preparatory expense. Method and means for this lowered preparatory expense offers much argument and option. Two of the major plans presented discuss some feasible means of medical college endowment to lower preparatory expense, and some plan of intermediate, short term teaching, that might be so adjudged to conform with economics as to furnish to struggling communities medical attention of repute and skill.

If some short term, temporary course, perhaps of rotating practice and study could be evolved as a corporate unit in the regulation medical course, this emergency service might tide over the present troublous times. Some step must be taken, and that immediately. Wisdom in control and cure of the present disastrous

crisis is expected from the organized ethical physicians of the country, through the A. M. A., and in turn through the state and county medical societies. Something must be done at once. If it is not, let no complaint be made if the farm population is ravaged by the malpractice of quacks and charlatans, and let not the medical profession complain a few years hence if the harvest of this sowing of a whirlwind of neglect shall be a thousand whirlwinds of disaster and destruction, both of the mother science and of the humanity that the medical profession is bound to serve.

In their ministry the rural and suburban communities seek not for spellbinders but for humble and sincere men of cloth. Not necessarily a genius in medicine is needed in every hamlet or village, but by all odds at least a sincere, humble follower of right and decency and skill as upheld by the medical profession.

Comparative figures of rural medicine, compiled by Dr. William Allen Pusey, are interesting and speak for themselves in illustrating the medical situation in rural communities.

TABLE 1.—*Rural Distribution of Physicians and Irregular Practitioners During Last Ten Years*

State	Medical Graduates of Last Ten Years	Irregular Practitioners of Last Ten Years in Same Counties
Arizona	1	16
Arkansas	3	11
Colorado	6	43
Connecticut	1	7
Delaware	2	2
Florida	4	12
Illinois	12	9
Indiana	5	14
Iowa	20	49
Kansas	6	15
Kentucky	0	2
Maine	12	20
Michigan	3	6
Minnesota	9	21
Missouri	5	17
Nebraska	13	37
New Jersey	6	2
New Mexico	0	5
New York	17	21
Ohio	12	15
Oregon	12	42
Pennsylvania	16	19
South Dakota	3	13
Tennessee	5	11
Texas	5	13
Utah	11	3
West Virginia	3	4
Wisconsin	13	22
Wyoming	5	18
	210	472

TABLE 2.—*Irregulars in Counties Without Recent Physicians*

State	Counties Not Having Medical Graduates of Last Ten Years	Number of Irregulars Entering Practice in Same Counties in Last Ten Years
Arizona	2	7
Arkansas	5	11
Colorado	1	6
Florida	3	5
Illinois	1	1
Indiana	3	6
Iowa	3	10
Kansas	2	5
Kentucky	3	2
Michigan	1	0
Minnesota	1	5
Missouri	5	10
Montana	3	2
Nebraska	2	12
New Mexico	5	5
New York	1	4
Ohio	2	6
Oregon	5	8
Pennsylvania	3	5
South Dakota	3	6
Tennessee	3	1
Texas	1	1
Utah	2	0
West Virginia	4	3
	64	121

FARMERS WILL DEMAND STATE MEDICINE UNLESS AMERICAN PHYSICIANS CLEAR UP PRESENT DEARTH OF MEDICAL PRACTITIONERS

THIS ALTERNATIVE IS MADE PLAIN ALL THROUGH THE FOLLOWING CORRESPONDENCE AND ESPECIALLY IN THE SIXTH AND SEVENTH PARAGRAPHS FROM THE END OF THE LETTER SIGNED BY L. J. TABER, MASTER OF THE NATIONAL GRANGE.

Cleveland, Ohio, November 24, 1927.

House of Delegates,
American Medical Association.
Gentlemen:

We, the officers and delegates attending the sixty-first annual session of the National Grange, assembled at Cleveland, O., and representing 800,000 members, who are engaged in agricultural pursuits, wish respectfully to bring to the attention of your association the growing scarcity of country doctors. It is our hope in so doing that your association may lend the weight of its influence to such readjustments and reforms in medical education as will serve to replenish the dwindling supply of country doctors and avert a general breakdown in rural medical service, which, unless present tendencies are arrested and corrected, appears to be inevitable.

According to the findings of a survey made for the General Education Board by Lewis Mayers and

Leonard V. Harrison, published in 1924, there were approximately 33,000 physicians in places of 1,000 inhabitants or less in the United States in 1906. In 1924, according to this report, this number had been reduced to 27,000, showing an actual loss of 6,000 rural physicians in 18 years. More recent investigation shows that almost one-third of the towns of 1,000 or less, throughout the United States, which had physicians in 1914 had none in 1925. The average age of rural doctors throughout the country in 1925 was 52 years. Since the average age at death of American physicians is 62 years, it will be seen at a glance that the present generation of country doctors will have practically disappeared in another ten years.

With this situation staring us in the face, it is ominous, to say the least, that only a very small percentage of the medical doctors graduated during the past ten years have taken up the practice of their profession in the rural districts. Careful inquiry reveals the fact that there are literally scores of rural counties in the United States where not a single doctor receiving his degree during the past ten years has settled.

In the meantime, we hear more and more of the increasing hosts in the rural sections who are "medically helpless", while the cost of medical service, where it is to be had, mounts higher and higher.

Notwithstanding this situation, we find that the Commission on Medical Education, which is now studying the subject, reports that with the medical school capacity we have in the country at the present time, and their graduates averaging 27 years of age, the number of physicians in practice is actually decreasing and that their number will not regain its present size of 130,000 until 1965. In the meantime, the population of the country, the Commission estimates will have increased from 115 millions to 164 millions.

We glean from a published report of one of the committees at the last annual convention of the American Medical Association, held at Washington, that "the medical profession does not attract so many qualified young men and women as formerly." The report also notes that a dangerous concentration of doctors in cities is taking place, leaving the rural communities without adequate medical service.

The reason for this situation is not far to seek, and is hinted at by the committee in question. Under the minimum requirements which have been established, the prospective doctor must spend seven years after leaving high school in securing his education. Aside from the long period of pupilage, he must assume excessive financial responsibilities before he can begin the practice of his profession. This automatically operates to close the doors of the medical profession to thousands of those who possess all the natural qualifications to make them successful physicians under a more reasonable system of preparation.

It is only in very rare instances that the son or daughter of a farmer could hope to enter the medical profession under prevailing conditions. This holds true of people of average means in other walks of life.

We are in hearty accord with a distinguished former President of the American Medical Association, Dr. William Allen Pusey, when he says: "If the poor boy, who is used to the simple life and to effort rewarded only by the simpler luxuries, cannot enter medicine, who is going to do the ordinary work of medicine in the city or in the country? The man who can live without productive labor until he is 25 or 30 years old, who can spend $8,000 or $10,000 on his higher education, is not looking for an ordinary practice among ordinary people in the cities, or for any practice in the country."

If the supply of country doctors is to be replenished, these doctors must come from among the young men and women of the country districts, as was the case in former times. The type of graduates now being produced by our medical schools will not settle and practice in the country districts. This is conclusively proved by the experience of recent years.

The family doctor is rapidly becoming extinct. He is being supplanted by the specialist to a degree that is not warranted under practical conditions.

It is poor comfort to the expectant mother in the farm home to know that in the distant city there is an elaborately equipped maternity hospital, with specialists in obstetrics in attendance, when our system of medical education to an increasing extent compels her to rely upon a midwife or the friendly offices of a neighbor in facing her ordeal. It is not necessary to elaborate on this phase of the situation. Parallel illustrations will readily suggest themselves.

The need is for more general practitioners, whose outlay in time and money in securing their medical education will be such that their services will be within the reach of the rank and file of the people, who constitute the overwhelming majority of our population, whether urban or rural.

We are not advocating one class of doctors for the country and another for the town. The country doctor, who is compelled to rely largely upon his own resources, without many of the facilities afforded in city hospitals, and without the advice of specialists, should be the best product of our medical schools.

Neither are we advocating any lowering of medical standards. What is required is more practical instruction, which may be acquired in less time and with the expenditure of less money than under prevailing conditions. We find that it is the opinion of many physicians of the highest standing that present medical education is not giving the most resourceful practitioners for ordinary service; it is producing practitioners who are dependent upon hospitals and laboratories, while these facilities according to authoritative medical opinions are necessary in hardly more than 10 per cent of illnesses and accidents. It is in the care of this 90 per cent of illnesses for which independent, resourceful physicians are necessary, that the rural communities are mostly in need. For the 10 per cent of emergencies requiring specialists and

hospital service, rural people can, perhaps, in most cases by an effort utilize urban facilities. However, the cost of these distant facilities makes them impracticable by rural people except in cases of emergency. Because of their cost they are not practical for 90 per cent of ordinary illnesses and accidents which, in the aggregate, produce the greatest sum of suffering, and whose early neglect leads to the serious emergencies. This 90 per cent of illnesses cannot be handled through distant doctors and urban hospitals. If the people are to have adequate medical service, they must have physicians in their own communities.

The number of medical schools in the United States has been reduced from 160 to 69. Many of the smaller medical schools, which served a useful purpose, have been forced out of existence by highly endowed institutions, nearly all of which receive large appropriations of public funds. The direction and control of these schools has largely passed out of the hands of the people or their representatives.

The leaders of the medical profession and those who are charged with shaping the policies of these institutions are the guardians of a sacred trust. It is for them to recognize the difficulties of the situation into which we are so rapidly drifting and to propose a practical solution.

Failing in this, it is for the people to determine whether it would not be good policy, as necessity demands, for the States to build and maintain medical schools solely under public control and responsive to the needs of humanity.

We note that there are many distinguished physicians in the United States who believe that a proper medical education can be given upon the basis of a high school education and four years of subsequent training, provided this includes at least one year of practical experience in a hospital; that unanswerable evidence to confirm this opinion is furnished by the fact that many of the physicians of the highest standing in the country at the present time and an equally great number of your most useful servants of society, but of less distinction, scattered throughout the country, have had a training not exceeding this. If such a training will produce competent physicians, we think that the argument is unanswerable that such physicians will be less expensive and their services more widely available to the people.

We are, however, not undertaking to offer our opinion upon the details of medical education; our purpose is to emphasize to you our needs as we see them. We wish to follow wise medical leadership, to escape if possible the mistakes of unwise legislation which might open the doors to all sorts of incompetents. But we feel that we should call the attention of the profession to the fact that we are compelled by force of circumstances to be concerned with the usefulness of the medical graduates that are turned out and their apparent failure under present conditions to meet the needs of rural communities.

It is pertinent to observe that it has taken about twenty years to bring about the present situation and it will require some time to extricate ourselves from it. No time should be lost in prescribing remedies intended to effect a cure.

Various remedies have been suggested to relieve the situation with which we are confronted. But in the main these proposals call for mere makeshifts. They constitute an effort to deal with the effect without removing the cause of the shortage of country doctors. In our opinion, the only adequate remedy will be found in the adoption of a more rational system of medical education.

Again expressing the hope that your organization, to which the people have been accustomed to look for leadership in medical affairs, may recognize the urgent need of the reforms suggested and strive for their realization, we are

Respectfully yours,
THE NATIONAL GRANGE,
L. J. Taber,
Master.

Correspondence

UNIVERSITY OF ILLINOIS HAS IDEAL SYSTEM OF PRACTICE OF MEDICINE AMONG ITS STUDENTS

Champaign, Illinois, July 14, 1928.

To the Editor: I have been reading with much interest the results of your investigation concerning the practice of medicine among the students in attendance in the various state universities. I can not refrain from saying that I think the plan which exists at the University of Illinois compares very favorably with any of them. And further than that, practicing among them as I do, I am quite sure that we are not training future citizens to expect the state to take care of them medically; nor is the medical profession of this community being unduly imposed upon. No student, rich or poor, is ever neglected here when he needs medical or surgical attention. But the services rendered are invariably a personal, private matter between him and his physician.

Cleaves Bennett, M.D.,
Councilor Eighth District.

Note: We quite agree with Dr. Bennett. The University of Illinois has inaugurated a system of medical care of its students that seems to be satisfactory to the local physicians and the officers of the County Medical Society and seems to meet all the requirements of the parent organization.

IF THE DOCTORS WON'T, THE FARMERS WILL. THE LAST CHANCE TO LOCK THE DOOR BEFORE THE HORSE IS STOLEN CONFRONTS THE MEDICAL PROFESSION

Silvis, Illinois, July 1, 1928.

To the Editor: The inclosure relative to the country practitioner and the national grange action (published elsewhere in this issue) is worthy of attention in that same connection, for if we do not furnish it, they will make one sure as hell. Maybe they will use sanitologists, but they will take one from some place which seems to offer promise and they will tune up its education a bit then use it.

The pathetic part of the appeal is that the A. M. A. has given up its authority over medical education—abdicated in favor of a bunch of pedagogues who are soft.

There is an editorial and some educational work in that item. The farmers brought it on themselves, of course, by refusing to honor their local practitioners and flying to "specialists." They went to anybody away from home. Those with good credit went to Rochester on advice of their local druggist—the others went more modestly to neighboring larger towns which had "specialists." The local men starved and the war gave them a chance to move. Now it's hell on the farm. But if we don't supply their idea of their need they will find someone who will.

We should regain control of medical education and make the specialties post graduate entirely.

W. D. CHAPMAN, M. D.,
Chairman of the Council of the Illinois State Medical Society.

THE BASIC SCIENCE LAW IS NO MORE THAN THE PROVERBIAL PADLOCK THAT IS USED AFTER THE HORSE IS STOLEN

Springfield, Illinois, July 26, 1928.

To the Editor: Thank you very much for sending me the various clippings, and I certainly think it was nice of the Editor of the *New York Journal* to devote as much of his valuable space as he did to reviewing the editorials of the Illinois State Medical Journal.

I am doing all that I can in my feeble way to arouse the medical profession to dignify their position politically. I do not believe that anyone would accuse me of running away from a political scrap, and yet if we can avoid controversies we save money, time and patience and there is no gainsaying but that an apathy in certain medical sections in other states has resulted most disastrously, for the Basic Science Law, in my humble judgment, is no more than the proverbial padlock that is used after the horse is stolen.

It seems to me that it is rather paradoxical that a group of physicians in the good state of Kansas should be clamoring for a Basic Science Law, and that similar groups of physicians in many other states are maintaining that such a law is distinctly a retrogressive step. However, as I am a firm believer in the sovereignty of state's rights, it is uncalled for for me to criticise the attitude that other states are taking toward this rather new innovation in medical licenture. I sincerely trust the day will never arrive when Illinois will have to ask the public to pass this sort of a measure.

JOHN R. NEAL, M. D.,
Chairman Legislative Committee.

CRIPPLED CHILDREN CLINICS OF THE ROTARIANS IN FUTURE WILL BE DIRECTED BY MEDICAL SOCIETIES

As soon as the Rotarians understood the significance and underlying merit of the problem of clinics for crippled children this progressive organization was not only willing but eager to cooperate with the medical societies, since "The best is none too good" was the motto under which the Rotarians originally undertook these clinics.

Delay in bringing this result about, that has extended over some four or five years, was due in some measure to the changes in personnel of the executives of the Rotarians.

July 25, 1928.

Dr. John E. Tuite,
President Illinois State Medical Society,
Rockford, Illinois.

Dear Doctor Tuite: A few weeks ago I sat in a meeting with the Crippled Children Committee of the Rotarians here in Chicago, merely as an advisor and observer. Their plans, if carried out as indicated to me, are entirely different than when Dr. East was employed to give Clinics over the State without regard to anyone.

Their Committee passed a Resolution referred to by Dr. Camp, and reported by me to the

Council, in sum and substance that: "Clinics for Crippled Children will be held only after conferring with the local County Medical Society, and gaining their consent to hold such Clinics. Before Clinics are held an advance M. D. should confer with the officers to ascertain whether a Clinic is advisable or wanted."

At these Clinics the poor child may be cared for, brought in by the family physician or nurse, and an M. D. may bring his pay patients in for consultation and suggestions. These may or may not be paid for, and is entirely up to the family and family physician.

This seems a very fair arrangement if the Rotarians live up to the same.

I hope this will answer your purpose.

Very truly yours,
R. R. Ferguson, M. D.,
4175 Irving Park Blvd.

THE NEWTON BILL HAS THE SAME LANGUAGE AS THE SHEPPARD-TOWNER BILL WITH REGARD TO THE INVASION OF HOMES BY AGENTS OF THE CHILDREN'S BUREAU, BEING CAREFUL TO PROVIDE NO PENALTY FOR THIS INVASION.

The Newton Bill Outclasses the Sheppard-Towner Act, Because of a Provision at the End of Section 1 Which Would Make Co-operative Activity Between the United States Government and the Rockefeller and Other Foundations, With the Funds of Both, in Partnership, on a Fifty-Fifty Basis, Thereby Sandwiching the State Between the Children's Bureau Paternalists and the Uplift Socialists

642 Second Street, Brooklyn, N. Y.,
July 15, 1928.

In-re H. R. 14070, May 28/28,
By Rep. Walter H. Newton, Minnesota.
(Illinois Medical Journal, July, 1928, Page 3)

Copy to Rep. Jas. S. Parker (New York) and others of H. R. Committee on Interstate and Foreign Commerce.

Hon. Loring M. Black, Jr.,
Representative in Congress,
Fifth District, Kings County, N. Y.,
228 St. Francis Place,
Brooklyn, N. Y.

My Dear Mr. Black: Your constant watchfulness and your consistent loyalty and your uniformly respectful consideration of the judgment of the Medical men of this County makes the reference herein to the fact that the two Congressmen (Lee and Bond) from this County who voted for the enactment of the execrable Sheppard-Towner Maternity (Birth-control) Bill failed of re-election of no application to you or the Congressmen from Kings County. . . . It is made, however, for the purpose of putting Doctors throughout the Country on notice that what the Medical men of Kings County did to Lee and Bond they can do to their Representatives if the crafty attempt of the Socialized Medicine Apostolate in this Country try to enact this Bill of Mr. Newton's.

TO PROVIDE A CHILD WELFARE EXTENSION SERVICE, AND FOR OTHER PURPOSES.

The People awoke to the menace of the Sheppard-Towner Maternity (Birth Control) Bill enacted in 1921, the operation of which for the years 1921-1926 reduced the Birth-rate in this Country 2.4 to the 1,000 population, which means 250,000 babies PER ANNUM who will never be American Citizens.

The People must realize that when a horde of Bothersome Berties and Meddlesome Matties from the Children's Bureau of the Federal Department of Labor mill around among the women of Montana in an intensive campaign, during those five years, and that the State of Montana thereupon comes through with the lowest birth rate in the Nation and the highest septicemic rate, they have a picture of birth-control-propaganda-results which is as clean-cut as a cameo.

They should know that all the "makings" of the Sheppard-Towner Maternity Bill (which is now discredited) are in the new Bill of Mr. Newton, to wit: the $1,000,000 appropriation per annum; the plenary expansion of Police Power of the State which makes the Children's Bureau capable of making rules and regulations with

the force and effect of Statute and make the Executive, Legislative and Judicial trinity, designed by the founders of this Nation, a sorry joke because this Bureau is above and beyond the power of the Supreme Court of the United States, as witness Sec. 4 of that Newton Bill which has the same language as the Sheppard-Towner Bill with regard to invasion of homes by Agents of the Children's Bureau, being careful to PROVIDE NO PENALTY for this invasion and putting it up to the parent or guardian to resort to assult or Injunction to keep these busybodies out of the American Home.

The Newton Bill outclasses the Sheppard-Towner Act, however, because it has a cute little provision tucked away down toward the end of Section 1 thereof which would make cooperative activity between the United States Government and the Rockefeller and other Foundations, with the funds of both, in partnership, or a fifty-fifty basis, thereby sandwiching the State between the Children's Bureau Paternalists and the Uplift Socialists. . . . This policy was in the minds of the Apostolate of Unrest in the Rand School in 1919, in the Bills for Compulsory Health Insurance with Maternity Aid, and it is showing itself again.

The Medical Society of the County of Kings, at its first meeting in October, will, I am quite sure, adopt a Resolution condemning this Newton Bill. Meantime will you please do what you can (which is much) to expose and circumvent these sappers of National security.

Sincerely,

JOHN J. A. O'REILLY, M. D.

DONT'S FOR DOCTORS

BY THE WIFE OF ONE OF THEM

DON'T forget that the world takes the doctor at his own valuation.

DON'T forget that nothing succeeds like success. You needn't expect people to say "There goes my Doctor" unless they can be proud to say it. Look successful if you want to be successful.

DON'T devote yourself to your profession so wholeheartedly that your family have no place in your scheme of things. It's a poor rule that won't work both ways. Do you want to be left out of their calculations, except in the only thing that you seem willing to give them—money?

DON'T make a martyr out of yourself to your work, thinking that people appreciate it and that in the end you will receive a fitting reward. You will, but not the one you're expecting.

DON'T ever get it into your head that your duty to humanity in a general, in a world that was created without your help and that will continue to function at least as efficiently as it does at present long after you have shuffled off this mortal coil, should take precedence over the wife you chose, and the children that you brought into being. If you do, the time will surely come when you will realize that the plaudits of the multitude may be conducive to pleasant living, but that they make cold and cheerless comfort for the dying.

DON'T think that you are a good business man. There isn't one chance in a million of its being true, and the sooner you acknowledge it and put temptation, in the shape of an investment that is to provide a living without labor for you in your old age, behind you—the better is it going to be for you and for those dependent on you.

DON'T consider it a thing of little consequence that your wife, being the good sport she is, gives up her comfort, her convenience, and her pleasure that your work may not suffer. You have a certain duty to her, you know, as well as to mankind in general. You didn't promise, before God, to cherish old lady Green, whose wealth could keep two doctors at her bedside. Just once in a while try putting your wife's happiness before your work. No danger of your overdoing it; she wouldn't let you. You'd find that an occasional deviation like this from the general rule would bear such fruit for you as could never blossom on the withered branch of old lady Green's regard.

DON'T forget that, human nature being what it is, people value a thing according to what they have to pay for it. A doctor's services are no exception to this rule.

DON'T let your wife have all the work and responsibility of bringing up the children. Possibly she does have more time than you have; and quite probably she has more capability; but don't let her find out for herself, if you can help it, how well she can manage without you in this or any other undertaking. It isn't good for the

relationship existing between you. You may not want to be hampered with a clinging vine type of woman, but do you really want her to feel that a nice bank account could adequately, and with less bother to her, take your place?

DON'T neglect sending out statements with frequency and regularity. Allowed to run for a long time, a bill becomes a "dun" in the patient's eyes, and is resented accordingly, while small statements sent regularly as a part of the office routine would be paid cheerfully and without comment.

DON'T think for one moment that your family would rather, at your death, be left a plethoric bank account than the memory of loving comradeship. You might discuss the question with them, if you have any doubts on the subject.

DON'T forget that the atmosphere of deference and adulation that a doctor breathes is an unnatural one for the sons of men and more or less unhealthy, tending to increase the head size. This unfortunate tendency can be successfully combated and, except in aggravated cases, entirely overcome by a generous application of the principles of common sense.

DON'T forget to keep your sense of values on straight. In this "Don't" is summed up all the others. There's a price to pay for everything in this world. Be sure you're paying for the thing you want, or else that you are not paying too high for the thing you're getting.

FLORENCE AIRD.

AMERICAN PUBLIC HEALTH ASSOCIATION

THE PROFESSIONAL SOCIETY OF THE PUBLIC HEALTH WORKERS OF NORTH AMERICA

ORGANIZATION

The American Public Health Association was organized in 1872 by a small group of sanitarians who saw the great need for accumulating existing public health knowledge, promoting study, sharing information and making it available to an uninformed and often misdirected public. From a small beginning, it has grown steadily until today it is the largest and best-known public health organization on this continent.

Such famous public health leaders as Stephen Smith, Carlos J. Findlay, William Thompson Sedgwick, have been closely identified with its history. Its membership roll today contains names as highly honored and as intimately connected with its activities.

For fifty-five years the Association has had an uninterrupted career of usefulness. It serves the public health worker directly, and through him, the people. It aims to develop public health standards, to stimulate the recruiting and training of public health personnel, and to strengthen the public health profession.

SECTIONS AND COMMITTEES

The Association has nine sections: Laboratory, Health Officers, Vital Statistics, Industrial Hygiene, Food, Drugs and Nutrition, Child Hygiene, Public Health Engineering, Public Health Education, Public Health Nursing, and more than fifty technical committees on such subjects as Standard Methods for the Examination of Water and Sewage; Milk; Shellfish; Ventilation; Water Supply; Dairy Products; Health Problems in Education; Public Health Training, Forms and Methods of Statistical Practice; Control of Communicable Diseases; Administrative Practice. It is through the studies and reports of these groups of authorities, serving voluntarily, that the Association has contributed most profoundly to the advancement of public health.

AFFILIATED SOCIETIES

The Association has affiliated societies in several states. These are organizations of professional public health workers organized for the same general objects as the American Public Health Association.

PUBLICATIONS

The American Journal of Public Health is the official publication of the Association. Its monthly issues contain the reports of technical committees, from six to ten authoritative articles on current public health practice in its various phases, dependable editorial comment, book reviews, an annotated health bibliography, trustworthy advertisements, and departments and regular features devoted to specialized interests. Other publications are:

Standard Methods of Water Analysis
Standard Methods of Milk Analysis
Standard Methods for Bacteriological Examination of Shellfish
Public Health Training
Light and Health
Community Health Organization
Swimming Pools and Other Bathing Places
The Control of Communicable Diseases
Industrial Wastes
Definitions for Sewerage and Sewage Disposal Practice
Appraisal Form for City Health Work
Appraisal Form for Rural Health Work
A Half Century of Public Health
Bibliography on Health
Milestones of Public Health in America
Health Officers News Letter

SERVICES TO MEMBERS

The Association maintains for service to its members the following activities:

Information Service. The executive office supplies reliable information on public health subjects. If not immediately available, it secures it through correspondence with experts.

Personnel Service. An up-to-date list of all openings in public health work that the executive office can locate is available for members.

Book Service. A bibliography on health comprising more than six hundred titles is compiled annually and distributed free. Expert opinion on books and authors is given. Any book from any publisher is obtained at list price. Members are given ten per cent. discount on certain publications.

Field Service. Surveys and appraisals of community health work, information regarding correct administrative practice, detailed studies of local health problems, regular consultation and advisory service are provided.

Educational Service. A syndicated service of cartoons and articles is offered to health and other organizations to send out over their own names. Experts are available, on request, for conferences, addresses, etc.

Annual Meeting. This is the greatest annual congress on public health held on this continent. No similar opportunity is provided health workers of all classes to discuss common problems on a common ground. Each Section provides a program of from two to five sessions and there are several general sessions in which the entire Association participates. An exhibit of equipment and apparatus for the public health profession and of reputable products related to health is a feature. Space diagrams and prices will be furnished on request.

MEMBERSHIP

The Association's active membership is limited to professional public health workers in the United States, Canada, Cuba and Mexico. It has associate members in all parts of the world, this grade of membership being open to anyone, anywhere with an interest in public health. It has affiliated members in several states, these being professional members of affiliated societies.

Fellowship is awarded to active members of two years' standing for meritorious service in their particular fields.

Sustaining membership is open to those who wish to contribute financially to the promotion of public health.

Active and associate membership dues are $5.00 annually, affiliated membership dues are $1.00, fellowship dues are $10.00 and sustaining membership dues are $50.00 or more.

The American Journal of Public Health goes to all members except affiliated members.

INVITATION

Theodore Roosevelt once said: "Every man owes something to the upbuilding of the profession to which he belongs."

Sanitarians will contribute to the upbuilding of their profession by joining the American Public Health Association and its affiliated societies, and participating in their activities. The American Public Health Association is the recognized society of the public health profession.

The Executive Secretary will be happy to forward application blanks upon request.

Address HOMER N. CALVER, Executive Secretary,
American Public Health Association,
370 Seventh Avenue, New York City.

Or blanks may be secured at the Chicago headquarters of the Association, Room 409 Hotel Stevens; Telephone, Wabash 4400.

CLINICAL CONGRESS OF PHYSICAL THERAPY AND SEVENTH ANNUAL MEETING AMERICAN COLLEGE OF PHYSICAL THERAPY

Announcement is made of the third clinical Congress on Physical Therapy in conjunction with the seventh annual meeting of the American College of Physical Therapy, to be held at the Hotel Stevens, Chicago, October 8 to 13, 1928. For the past year plans have been under way to make this 1928 Congress the most interesting one ever conducted and one which will be difficult to surpass in the future. So many novel and attractive features have been injected in the six-day program that no physician, whether he is now doing physical therapy or whether he plans to do it later, can possibly afford to absent himself from this scientific gathering.

The scientific addresses to be presented are of vital importance to the medical profession and will come from leading European and American authorities on the basic and practical phases of physical therapeutics. Symposiums on Cancer and Tuberculosis, the newest scientific information in these fields should attract physicians from all sections, for no two problems in the field of medicine require more thorough and extensive research and elaboration than these. Sectional meetings in *medicine, surgery,* and allied branches, and in eye, ear, nose, throat and oral surgery will be of interest to specialists in their respective fields, and for those who are new in physical therapy, special instruction classes in the physics and practical application of the various physical agents have been arranged.

Dr. Carl Sonne of the Finsen Medical Light Institute, Copenhagen, Denmark; Cav. Prof. Dr. Donato de Francesco of Venice, Italy, and Dr. A. R. Friel of London, England, will expound the results of their personal investigations in their respective specialties, while over one hundred leading physicians and teachers from all parts of North America will complete a program that cannot help prove inviting to every worker in physical therapy.

The technical and scientific exhibits will furnish an array of material that you will want to see. The demonstration clinics, the group conferences, the clinical addresses, the round table talks and the hospital clinics make up other parts of the program. No expense has been spared to bring together the best talent available, so that this event should prove an unusual scientific forum for the discussion of diathermy, light galvanism, x-ray, radium, massage, sinusoidalism, therapeutic exercise, etc., et.c

Physicians, their non-medical assistants and techni-

cians, and hospital executives properly vouched for, are invited to attend all sessions for which only a nominal registration fee will be charged.

Write for program, registration card and other information now, as early registration by mail is urgently solicited because the instruction classes are limited.

AMERICAN COLLEGE OF PHYSICAL THERAPY,
Suite 820-30 North Michigan Avenue,
Chicago, Illinois.

RABIES A MENACE

The unusually menacing situation with regard to rabies has been brought to the attention of the public by the public relations committee of the Institute of Medicine of Chicago, consisting of Prof. Edwin O. Jordan of the University of Chicago and Dr. Ernest E. Irons, dean of Rush Medical College. The statement follows: During the last year the danger of injury and death to the citizens of Chicago from the bite of rabid dogs has greatly increased. It is believed that at the present time the perid is sufficiently great to justify a public and urgent warning. The facts, as furnished by Dr. Arnold H. Kegel, commissioner of health, are as follows: the number of rabid dogs has risen enormously in recent months as shown by laboratory examination. In the five months from January to May, 1926, the number of dogs' heads examined in the laboratory of the health department numbered sixty, of which five were from rabid animals; in the same period in 1927, fifty-six were examined, of which eleven were positive, while in the first five months of 1928, 704 heads were examined and 561 gave evidence of rabic infection. In May, 1928, there were almost as many dogs' heads examined as in the whole year 1926, and seven times as many were found positive. Since August, 1927, 1,046 persons known to have been bitten by rabid dogs have been given the Pasteur treatment by the department of health. This figure does not represent the total number treated since many persons receive treatment from private physicians. The treatment, as is well known, is highly effective if begun in time, but is expensive and time consuming. The situation is unprecedented in the history of Chicago and probably in that of any other large American city. While from August, 1919, to August, 1927, no human deaths from rabies were reported in Chicago, in the last ten months there have been nineteen deaths; in the year 1927 there were only fifty-nine human deaths from rabies in the whole United States. The emergency demands prompt and drastic action. It is well known that rabies can be eradicated by the restriction of the liberty of unmuzzled dogs to the premises of their owners and the destruction of all stray unmuzzled animals. The cooperation of closely adjoining communities will insure the success of this plan. The machinery is ready to hand. Strict enforcement of the city ordinance for at least ninety days should be effective. Valuable individual dogs may be protected to some degree by vaccination against the bite of their rabid fellows, but for community protection the method is probably too expensive and difficult of application at the present time. It is inconceivable that the prevalence of rabies in Chicago shall be allowed to go on from bad to worse until scores of children and hundreds of valuable dogs have been sacrificed. All the resources of the community available for stamping out rabies should be placed at the disposal of the official health agencies.

Journal A. M. A.

AND THESE ARE THE LEGS I REMEMBER

When I was a lad of eleven or so,
If memory serves me a-right,
The legs of the maidens I happened to know
Were always in obvious sight.
Their stockings were black, with a high button shoe,
In summer as well as December.
I turn back the pages of childhood's who's who,
And these are the legs I remember:

Lulu's were lumpy, and Ollie's were thin,
Bess ran to ankles and Susie to shin,
Nellie's were knock-kneed, and spread like a fan,
Fanny had fat ones that shook when she ran.

Well—thirty-odd years are supposed to pass by;
In fact, that is just what occurred;
The legs of my childhood concealed from the eye
By skirts, as you doubtless inferred.
Then fashions for women restored them to view,
Commuting their term of obscurity,
And every fond leg that my infancy knew
Now offers itself in maturity:

Lulu's still lumpy, and Ollie's still thin,
Bess has more ankle and Susie more shin,
Nellie's still knock-kneed (I laughed when she sat)
And Fanny's are fatter—no doubt about that.

— *The L. H. J.*

TAKE YOUR BREATH AWAY

"Say, Rastus, I'se gettin' scared. I'se just been a-readin' statistics here—and dey say dat every time I breathe a man dies."

"Lordy, man! Back up and hol' your breath!" admonished Zeke. "Don't you all know dat you ought to run to a doctor 'bout dat halmytoesis of your'n?"

A LAWYER'S, NOT A DOCTOR'S ADVICE

"What's the matter, old boy?" asked Jimmie's friend. 'I've never seen you looking so seedy."

"I've got to go abroad at once," remarked Jimmie gloomily.

"Nonsense! These doctors mustn't frighten you out of your life like that."

"It wasn't a doctor. It was a lawyer."

Original Articles

PRESENT DAY VIEWS ON GOITER, FROM THE STANDPOINT OF THE SURGEON

DAVID C. STRAUS, M.D.*
CHICAGO

Under the general term goiter, are included all enlargements of the thyroid gland. These comprise:

1. Physiological enlargement.
   - Adolescent goiter.
   - Goiter of pregnancy.
2. Simple goiter.
   - Adenoma—diffuse or circumscribed, fetal or acquired.
   - Colloid goiter.
   - Cysts.
3. Toxic adenoma (secondary hyperthyroidism).
4. Exophthalmic goiter (primary hyperthyroidism).
5. Malignancy of the thyroid gland.
6. Thyroiditis.
   - Acute.
   - Chronic.
     - Ligneous thyroiditis.
     - Tuberculous.
     - Syphilitic.

Simple goiter is one of the most widespread diseases in this country and surveys by Public Health Authorities have shown that fifty per cent of the children in goiter districts are affected. In these same districts numerous adults suffer from adenomas which develop from simple goiters uncared for during adolescence, while still later, some of these adults with adenomas, develop carcinoma of the thyroid from these adenomas. Marine and Kimball deserve great credit for they were the first to institute systematic goiter prevention in school children by administering minimal doses of iodine during the school year. Their results were convincing and immediately after the publication of this data, Switzerland, the most goiterous country in the world, started goiter prophylaxis in its schools, giving one tablet containing 10 mg. of iodine (about 1/6 gr.) to each child, once a week, during the forty school weeks of the year. The striking results, after continuing this method for four years, is shown by the fall in incidence of goiter in one Canton, from 87.6 per cent in 1918, to 13.1 per cent in 1922. Kimball (in 1925) recommends one tablet daily for thirty days, during alternate months.

Iodine should be used thus only in persons under twenty years of age. The adolescent goiter, ordinarily a goiter of the pure colloid type, a smooth, symmetrical bilateral enlargement, usually disappears under iodine medication, though not always. If adenomatous goiters are present, these may decrease in size but will not disappear. *After adolescence, a well developed adenoma should always be removed* for it is well recognized today that ninety per cent of cases of malignancy of the thyroid, develop from pre-existing adenomas. Our best means of preventing cancer of the thyroid, consists in surgical removal of all adenomatous goiters in adults. The particular type of adenoma which gives rise to carcinoma is the fetal adenoma. These originate from the so-called "Wolfler's rests" and are well capsulated tumors, as a rule.

The use of iodine during pregnancy is entirely a question for the internist, general practitioner and obstetrician. It is well known, even by the laity, that a pre-existing goiter enlarges during pregnancy, and there is a tendency for the normal gland to show some enlargement due to the extra work it is called upon to perform. The gland not only has the usual call for the metabolism of the mother, but in addition, there is added the metabolism for the fetus. However, unless the mother is under twenty-one years of age, pregnancy will not cause a goiter to develop. Therefore there is no necessity of administering iodine during pregnancy in order to prevent goiter in the mother, except that, in the absence of an adenomatous goiter, iodine may be given in small doses, five to ten milligrams a week, in order to satisfy the demand of the thyroid gland of the fetus and thus tending to prevent the future development of a colloid goiter. In young mothers, especially those with a colloid goiter or the remains of one, iodine is particularly indicated so that they may be able to supply an adequate amount of iodine to the fetus. In passing I wish to call attention to the fact that whenever a patient with exophthalmic goiter becomes pregnant, prompt thy-

*Read before the Will County Medical Society at Joliet, on March, 1928.

From the Goiter Group at Michael Reese Hospital.

roidectomy is usually indicated. Pregnancy greatly aggravates exophthalmic goiter.

The following are the indications for operation in the case of simple goiters:

1. For cosmetic reasons.
2. Because of pressure symptoms, if these exist.
   (a) Difficulty in breathing (dyspnea), at times accompanied by cyanosis.
   (b) Difficulty in swallowing (dysphagia).
   (c) Pressure on recurrent laryngeal nerve, as evidenced by brassy cough, change of voice, etc.
   (d) Intrathoracic location.
3. Adenomatous goiters, to prevent later possible development of malignancy, especially when discovered in adults; best even in young persons past the age of adolescence.

In some of these simple goiters with pressure symptoms, while ordinary inspection and palpation may not disclose a mass of any appreciable size, a roentgenogram may often yield surprising evidence of tracheal compression or displacement. This is all the more true if the goiter is intrathoracic in location.

The treatment, of course, consists of resection of the mass, but no such complete resection as in cases with hyperthyroidism. The amount of gland that should be left is approximately that of a normal gland. It is not infrequent, in cases of large colloid goiters with pressure symptoms, to find basal metabolic rates considerably below 0, that is associated with hypothyroidism. In such a case, if enough gland is removed to relieve the pressure symptoms, it may even be necessary to feed thyroid gland or thyroxin after the operation.

Toxic adenoma (secondary hyperthyroidism).—This group comprises those cases in which a simple goiter has been present usually for years, with no evidence of hyperthyroidism in which later, and usually very insidiously, symptoms of hyperthyroidism make their appearance. An adenoma is present on an average of fifteen years before the symptoms of hyperthyroidism develop. The onset of symptoms differs strikingly from that seen in typical exophthalmic goiter. In exophthalmic goiter these symptoms come on rapidly. In the toxic adenoma group, the onset of symptoms is so insidious that the patient often does not realize any change in his condition and consequently does not consult a physician until organic damage to the vascular system has taken place, especially to the heart muscle. Seventy-five per cent of these patients are more than forty years old. They rarely are aware that there is any association between their nervousness and other symptoms of hyperthyroidism and their goiter. They often have been under some physician's care for disease of the heart or kidneys or for high blood pressure. Many will have noticed spells of palpitation. There may have been spells of cardiac decompensation with dyspnea. The heart is often enlarged and there is frequently auricular fibrillation and myocardial degeneration as evidenced by irregularity of the cardiac rhythm and pulse. All the symptoms of hyperthyroidism may be present, but in general, they are less marked than in the typical exophthalmic goiter patient. The two chief points of difference are that there is a tendency to hypertension and the heart symptoms often predominate in the picture. The systolic blood pressure is elevated, but the diastolic pressure is essentially normal. This gives a high pulse pressure, chiefly due to elevation of the systolic pressure. In exophthalmic goiter, on the contrary, there is also a high pulse pressure, but here it is not so much due to elevation of the systolic pressure, for this is ordinarily but slightly if at all elevated, but due to a fall in the diastolic pressure. Lahey and Hamilton have described this group of cases with marked cardiac damage, as "Thyrocardiacs," and have contributed much valuable information. Today every case of tachycardia heart disease must be considered as of possible thyroid origin and studied accordingly—i. e., two or more basal metabolic rate tests should be made.

It is now well recognized that with proper digitalization, many of these patients with auricular fibrillation will be relieved of their irregularity and restored to regular rhythm, and that even though the irregularity persists, most of these cases can be operated on with surprising impunity. A small percentage of the group with chronic *constant* auricular fibrillation never do show a return to regular rhythm. The point of outstanding interest is that subtotal thyroidectomy by promptly and permanently relieving the patient of hyperthyroidism, promptly restores the heart rhythm to normal, even within twenty-four hours, and that this regular rhythm is often permanent, even in patients who have

had irregular heart action for months or years.

In this connection, I wish to refer to two cases recently in our goiter group at the Michael Reese Hospital. Dr. Hamburger, who spoke before this society about a year ago on the subject of goiter from the standpoint of the internist, handles the medical care of these cases and I the surgical. The two cases I wish to mention were both in the hospital at the same time. The one was a typical thyrocardiac—a patient with hyperthyroidism and auricular fibrillation. In spite of long, persistent attempts to control the fibrillation, using digitalis, ergotomine, etc., the fibrillation continued. Finally, we decided to operate, even though the patient was fibrillating and the result was brilliant; fibrillation ceased the same day and has not returned. The second case, a patient with myxedema, was being treated with thyroid extract in increasing doses. She had never fibrillated. But when the dose of thyroid extract reached fifteen grains, it was noticed that she began to fibrillate. The dose was promptly reduced, and fibrillation promptly ceased. These two cases show the definite relationship between an overdose of thyroid secretion and auricular fibrillation.

The gland in many of these thyrocardiac cases is not only not enlarged, but it is even smaller than normal. Also, with proper preparation, these thyrocardiacs may be operated on even though in partial decompensation. Lahey recently reports operation on fifty of these decompensated cases, with only three deaths. Practically all the others regained compensation.

In one clinic the use of digitalis is carefully avoided, and these surgeons believe that their discontinuance of digitalis is the only factor that has been responsible for the reduction in their mortality rate. Digitalis has been of great value in my hands, but it should only be used when cardiac decompensation is present or beginning. *It should* NOT *be used merely to slow a rapid pulse*—i. e., in an attempt to control the tachycardia. If the heart muscle is normal it can only do harm.

Exophthalmic goiter (primary hyperthyroidism).—This disease is sometimes referred to as primary hyperthyroidism because (contrary to the so-called toxic adenoma cases—referred to as secondary hyperthyroidism) in exophthalmic goiter the onset of the hyperthyroid symptoms occurs simultaneously with the appearance of the goiter. The classical picture of a frank case of exophthalmic goiter is so well known that the diagnosis is simple. On the other hand, borderline cases are most difficult to diagnose, at times. The four cardinal signs, goiter, exophthalmos, tachycardia and tremor are not always present. Exophthalmos is often absent. Eye-signs, other than fixation, are not reliable and are often due to conditions other than hyperthyroidism and are often absent in frank hyperthyroidism. This is particularly true of lagophthalmos. The one most reliable symptom is fixation or stare. It is rare to see a case of primary or secondary hyperthyroidism without some degree of stare.

Goiter.—It is generally known today that the size of the thyroid gland bears no relation to the degree of hyperthyroidism. One should not hesitate in making a diagnosis of hyperthyroidism because the thyroid gland is normal in size, or even smaller than normal.

Tachycardia.—Tachycardia is probably the best guide in arriving at the diagnosis, especially in conjunction with the finding of a high basal metabolic rate. In general, the pulse rate and the intensity of the hyperthyroidism go hand in hand, although this is not always the case. I have repeatedly seen patients in the hospital who were definitely very toxic and had a high basal metabolic rate, in whom the pulse rate was not proportionately elevated, in fact scarcely higher than normal. In this connection it is well to point out that this is particularly apt to be the case if the pulse rate is taken when the patient is lying quietly in bed. For this reason, in borderline cases, it is desirable to take the pulse reading when the patient is up and about.

Nervousness and Tremor.—Both nervousness and tremor are unreliable symptoms because they are often present in the cases which simulate hyperthyroidism, that is, cases of neurocirculatory asthenia and in neurotic patients.

Muscle weakness.—Many patients with hyperthyroidism complain of a feeling of weakness of the knees and later find difficulty in walking up and down the stairs. Why the disease affects the quadriceps group of muscles is difficult to say.

Progressive loss of weight with increased food intake speaks strongly for hyperthyroidism and is characteristic. The only other condition where this is commonly seen is in diabetes. Later in the disease the patient may lose his appe-

tite and become nauseated at the mere sight of food, and may even vomit after being coaxed to eat. No case which comes under a physician's care while the patient has a ravenous appetite

Fig. 1. Photograph of patient, age 23 years, with exophthalmic goiter of six months duration. Photograph a few days before operation. Note high degree of exophthalmos. (June, 1925.) Under Lugol's solution her basal metabolic rate dropped 70 points before operation, from +90.8 on June 17, 1925, to +30.1 on June 24, 1925. Weight 98 pounds.

should be allowed to go without operation until nausea and vomiting occur.

Basal metabolism unless correlated with clinical evidence is valueless, but associated with clinical findings, is of greatest value. One must constantly bear in mind that there are chances for error in basal metabolism reports, due to variations in the apparatus, the skill of the technician and the conduct of the patient. One should never rely on a single basal test alone.

Hyperthyroidism in children.—Hyperthyroidism not infrequently is seen in children, and in most cases no etiological factor can be determined. The disease in children begins suddenly and runs a rapidly progressive course. Iodine administration is of very little value as a rule. These cases require very careful preparation for, in children, thyroidectomy is likely to be followed by severe and even dangerous reaction. Greatly emaciated children are bad surgical risks, but are more likely to show more improvement after polar ligation than that usually seen in adults.

Preoperative preparation.—The greatest advance in goiter surgery in the last four years, has been due to the use of iodine in the preoperative preparation of these patients. The routine use of iodine for this purpose will be referred to later in detail.

Any patient with hyperthyroidism with beginning vomiting, diarrhea, marked excitation or delirium is having or is about to have a crisis and should be treated with iodine, fluids, glucose and morphia. In my own cases I have found the following treatment to be of the greatest value:

1. The administration of five per cent glucose solution using 200 cc. as a rectal infusion, twice daily, every other day.

2. Pushing fluids, especially water, administering at least 3000 to 5000 cc. daily.

3. Giving 15 grains of calcium lactate by mouth twice a day. This slows the pulse and increases the efficiency of the heart. It is well known that an increase in calcium ions of the

Fig. 2. Photograph of same patient a few days after operation and before clips were removed which was done on the fifth day. Note complete change of countenance and definite decrease in exophthalmos even at this early date.

blood will slow the pulse rate and increase the efficiency of the heart. Rienhoff points out that the contractile power of heart muscle is diminished when solutions which contain no calcium

or an infinitely small quantity are perfused through a heart, experimentally.

4. Where prompt improvement is not shown, administering 500 cc. of ten per cent glucose solution intravenously.

5. In order to control unusual excitability or stubborn insomnia, luminol is given, 1½ grains at each dose, every six or eight hours. If, for any reason, some other drug is desired, paraldehyde may be used, giving 30 minims every six or eight hours.

6. Morphin sulphate, in 1/6 grain doses as indicated. In some individuals it causes unpleasant symptoms—nausea, vomiting, tachycardia and excitement—and in these, of course, it must not be used.

Plummer deserves great credit for the present routine use of iodine, in the preoperative prep-

Fig. 3. Photograph taken January, 1928, same patient three years later. Patient has gained over fifty pounds in weight. Note complete absence of exophthalmos.

aration of cases of exophthalmic goiter. He began his clinical tests in 1922 and found that the bests results were obtained when ten minims of Lugol's solution were given three times a day for seven to ten days before operation. In exophthalmic goiter so treated, he together with Balfour, reported two-thirds will be greatly benefited, one-quarter slightly benefited, and the remaining one-twelfth not appreciably benefited. These observations have been amply confirmed, but it is now well known that if iodine administration is continued over a period of more than two or three months, the basal metabolism gradually rises and eventually reaches the former high level. For this reason, iodine must not be used as a form of treatment, but merely as a means of preparing these cases for operation.

In my own experience I have found that the great majority of cases need iodine preoperatively for only seven to ten days, but in some cases I have found the greatest benefit did not follow until the end of two or even three weeks. I have had a case drop from +122 to +50 in seven days, and another from +91 to +30 in the same time, that is, a fall in basal rate of from 60 to 70 points in a week. In these extremely toxic cases I have had a fall therefore, amounting to 10 points a day!

Toxic Adenoma. Whereas there is general agreement among surgeons as to the value of iodine in the preoperative preparation of cases of exophthalmic goiter, there is great difference of opinion as to the advisability of using iodine before operating on cases of toxic adenoma. The Mayo Clinic taught that iodine should not be used in toxic adenomas and the majority of surgeons have been influenced by their teaching. However, more and more evidence is accumulating which shows that some of these cases do improve and in which examination of the specimen removed at operation shows that the thyroid presents no significant abnormality other than adenoma. In general, the majority of clinicians who see a large number of these cases believe that iodine does not produce as great benefit in toxic adenomas as it does in true exophthalmic goiter.

I have been interested in, and have been using iodine in cases of toxic adenoma preoperatively, since early in 1925. At first I gave these patients very small doses, only 3 minims, three times a day, and only when in the hospital where the effect could be carefully watched, so that if the pulse rate tended to rise, it could be quickly stopped. Later I increased the dose and recently I have been beginning with ten drops of Lugol's solution three times a day. I now have a number of cases where the benefit was definite. In one case in which histological examination showed adenoma and no finding of hyperplasia elsewhere in the gland, the pulse before giving iodine was 104 and the basal metabolic rate +50.4. The patient was given Lugol's solution, four drops three times a day for four days, then six drops three times a day for fourteen days, and finally ten drops three times a day for seven

days. Five days after beginning iodine therapy the basal rate was +30 and after 19 days it was +19.4. The pulse came down from 104 to 72.

Probably the most convincing report on the value of iodine in toxic adenomas is that of Graham and Cutler of Cleveland. For the purpose of studying the response to iodine in exophthalmic goiter and toxic adenoma, they selected only cases which had not had previous operative intervention, iodine treatment, x-ray or other therapeutic treatment and in which primary thyroidectomy followed the administration of iodine. So selected, they had four cases of toxic adenoma, with no exophthalmos and with no thrill or bruit. These four cases were not only not aggravated by the administration of iodine, but responded in the same manner and in about the same ratio as did the ten cases of exophthalmic goiter. In previously untreated cases, according to their experience, such a period of primary improvement following the administration of iodine has been the rule and not the exception. Increased basal metabolic rate and other evidence of thyrotoxicosis together with enlargement of the thyroid gland of any degree, they regard as sufficient indication for the administration of iodine, irrespective of the presence or absence of adenoma, but point out that cases of toxic adenoma require less iodine, and for a shorter period of time, than cases of exophthalmic goiter probably due to the difference in degree of glandular hyperplasia in the two conditions. My experience has not been identical with theirs in this regard—as to the amount of iodine and length of time of its administration—as can be seen from the case reported in detail above. They feel justified in recommending iodine preoperatively in all cases of toxic goiter, adenomatous or not, and I am of the same opinion.

Charles A. Elliott of Chicago, in a paper read before the Association of American Physicians, in May, 1926, reported his experience in the preoperative use of iodine in 18 cases of toxic adenoma and 18 cases of exophthalmic goiter. Thirteen of the former and fifteen of the latter showed more than fifty per cent, decrease in the basal metabolic rate. He expressed his surprise to find that there was very little difference in the response to iodine in the two groups.

In a recent study of 122 cases of thyroid disease, excluding carcinoma, made at the Michael Reese Hospital by Drs. Portis and Rubin, and checked by our pathologist, Dr. Schultz, in which the clinical manifestations and histological findings were correlated, it was found that 74.6 per cent of the 61 cases receiving iodine were benefited by iodine therapy, irrespective of whether the thyroid gland showed hyperplasia, no hyperplasia, or degenerative changes. The 122 cases included 44 adenomas. Of the 44 adenomas studied, 15 were treated by iodine; 10 of these 15 cases, improved very definitely. Five did not improve, 2 of the 5 were made slightly worse.

It seems likely that our present ideas in regard to adenomas are likely to need modification, and particularly regarding the use of iodine preliminary to operation in toxic adenomas.

Rienhoff, of Johns Hopkins, has recently submitted a new, and to my mind, a convincing explanation of the genesis of the nodules or so-called adenomas, in the group of cases we have been calling toxic adenomas. He believes these nodules are the *result of* and not the cause of the disease. He points out that "microscopic structure of the thyroid gland, viewed at any one period, is the result of the action of two opposing factors, the one producing hypertrophy and hyperplasia and the other involution of the parenchyma. Recent investigation has revealed that involution of a previously hyperplastic gland is characterized, throughout the greater portion of the thyroid, by certain histological changes. These consist essentially in decrease in the cytoplasmic elements, increase in the formation of fibrous tissue, and decrease in lymphocytic infiltration. This degree of involution has been termed the usual or average amount.

However, in certain areas, and confined as a rule to one lobule, the degree of involution exceeds the average and goes on to the formation of localized areas of large dilated colloid containing acini, encapsulated by compressed intra and interlobular stroma. Such an area has the microscopical appearance of an encapsulated co-called colloid adenoma. In other lobules, the parenchyma is composed of small round acini of the fetal type.

These *areas of hyperinvolution* have the exact microscopical appearance of the so-called colloid cystic, mixed fetal and colloid, and fetal ade-

nomata. Although they can be detected clinically as tumors, they are not true neoplasms or adenomata, because they have been observed to occur concomitantly with involution of the gland and artificial clinical remission. They are degenerative sequellae of previous hypertrophy and hyperplasia of the parenchyma, and are observed to occur in cases undergoing spontaneous as well as artificial remission. Each succeeding disease cycle causes an enlargement of these involutional bodies, with a more pronounced definition of their capsules. In other lobules, areas of persistent hypertrophy and hyperplasia are observed, in which the parenchyma *resists* the factors that bring about involution of the remainder of the gland. These have been termed *areas of hypoinvolution.*

All the involutional bodies maintain the microscopical structure of the thyroid gland.

These bodies form about ninety-five per cent (Rienhoff) of the nodules or tumors encountered in the thyroid glands. They are palpable clinically as tumors. They may be multiple or single. As a rule they are multiple.

True parenchymatous adenomata, often called fetal adenomata, do occur, but they compose only about five per cent (Rienhoff) of all the benign tumors or tumefactions of the thyroid. In these true fetal adenomata, the intralobular structure of the usual thyroid parenchyma is *not* maintained.

The involutional bodies or tumors, then, are the result and not the cause of hyperthyroidism, and can be histologically differentiated from true benign neoplasms. They are a phase in the disease cycle and are, as would be expected. larger and more numerous in those low grade cases of hyperthyroidism which have undergone many remissions and exacerbations (the older patients), thus being frequently associated with cardiovascular lesions.

Viewed from this standpoint, as well as from clinical evidence, and the response to iodine therapy, it seems more than likely that exophthalmic goiter and toxic adenoma are only variations of a single morbid state. Exophthalmic goiter may be looked upon as the more acute type, and toxic adenoma as the more chronic slowly progressing type.

Treatment. It is important to bear in mind that whenever a patient with hyperthyroidism, either exophthalmic goiter or toxic adenoma, is simultaneously suffering from some other surgical lesion, such as a chronic cholecystitis or appendicitis, thyroidectomy should be performed before operating for these other conditions, unless they present an unavoidable emergency.

The usual treatment for cases of exophthalmic goiter or toxic adenoma is subtotal thyroidectomy. Without wishing to take up the question of preliminary polar ligation and multiple stage operations, I may say that in my practice, ethylene is the anesthetic of choice though local is used in some cases. I use the collar incision, reflect the skin and the platysma muscle upward and downward as one flap. The skin and platysma muscle are divided together and reflected together. The upper flap is reflected at least as high as the hyoid bone and the lower flap as low as the jugulum. The veins are not ligated unless they have been injured. The deep cervical fascia is incised in the median line from the level of the hyoid bone to the jugulum. As a rule, I do not divide the prethyroid muscles but reflect them laterally. Occasionally where this does not give easy exposure I do not hesitate to divide the prethyroid muscles on one or both sides. The right superior artery is next exposed, doubly ligated with No. 2 chromic catgut well above the pole of the gland. The tip of the pole grasped with a cystic duct forceps and the artery divided between the clamp and the distal ligature. The upper portion of the isthmus is then freed from the trachea and great care to remove completely any pyramidal lobe which is present. Next the left superior polar artery is doubly ligated and divided, just as was one on the right side. This sequence is followed so that in case the patient cannot withstand more surgery at this time, the operation can be discontinued at this stage and resection of the gland can be completed at a second operation with great ease. Next, the isthmus is bluntly separated from the front of the trachea, doubly clamped and divided. I always like to add this step if possible because it relieves tracheal compression. Next, the right lobe of the gland is resected, leaving only a small portion of the lower pole and the posterior portion of the gland and capsule adjacent to the trachea, so as to avoid injury to the recurrent laryngeal nerve and the parathyroid glands. In this resection I always work from the midline laterally and the

amount of the gland that is left is relatively the size of the distal phalanx of the little finger.

The left lobe is then similarly resected. After ligating all bleeders most carefully so that the field is in reality dry, the deep cervical fascia is sutured together in the median line down to a rubber tube placed at the lower angle. Skin flaps are closed by means of Michel clips and one small, plain catgut suture is placed in the median line which is used to suture the rubber drain in place.

In my experience at the Michael Reese Hospital, where I have been surgeon at the head of the Goiter Group since January, 1925, operating on all of the service cases, leaving this small amount of gland has given excellent results, the basal metabolic rate at the time the patient leaves the hospital usually being about 0, occasionally a few points above or below; we have had no cases of tetany so far as we are aware, although this has been examined for by the other members of the group and but a single case has returned with a remission which required a secondary operation.

Recurrence. The prevention of recurrence is an important question in the surgical treatment of hyperthyroidism. Recurrence occurs in approximately 5.7 to 8 per cent of cases, according to available statistics, even in the hands of the most competent surgeons. It is well recognized that the four following factors are chiefly responsible for recurrence:

1. Too early resumption of mental or physical exertion; i. e., worry and work.
2. Infection. Failure to note and remove foci of infection.
3. Failure at operation to remove sufficient amount of gland. This I believe is the most common reason.
4. Pregnancy too soon after operation.

In the last few years, since the preoperative administration of iodine has become so well established, there has been considerable discussion as to whether or not the post-operative administration of iodine may not be of value in preventing recurrence. Else, of Portland, Oregon, read a paper on this subject at the last annual meeting of the American Medical Association, in May, 1927, and concludes that recurrence following operation depends on the control of regeneration and that thyroid regeneration can be controlled in animals, by compound solution of iodine and that for the last two years he has been giving this solution after operation and since that time has not seen any evidence of recurrence. Following the operation, the thyroid is kept saturated with iodine during the period of regeneration by giving the patient from 15 to 25 minims of Lugol's solution by rectum as soon as he has returned to bed, this dosage being repeated three to four times daily according to the severity of the hyperthyroidism preceding the operation. As soon as the patient is able to take it by mouth, 10 minims is given three times a day for a month. Then the dose is cut down to 10 minims daily for another month. A sufficient amount of iodine to meet the needs of the thyroid gland is administered continuously. For this he prescribes the iodized salt if other members of the family have normal thyroid glands; otherwise he gives 10 mg. of iodine, in a chocolate tablet, daily.

In the discussion, *Sloan of Cleveland,* pointed out that it is possible for a thyroid gland to enlarge even when it has sufficient iodine and that we are not invariably able to control the hypertrophy of the thyroid with iodine following operation. Some thyroids enlarge after operation, in spite of iodine. He believes these are the ones in which an infectious focus is to blame, in a great many instances.

Clute of Boston, said he had been using iodine after operation for the last year and a half or two years, with the idea of preventing recurrences, but that to date he is unable to say that his operations for persistent or recurrent hyperthyroidism are any less numerous than they were. He still feels that iodine should be given for the prophylaxis of recurrence, but as yet, he has not seen any great advantage from it.

Crile, on the other hand, carefully avoids iodine after operation. He noticed, shortly after the use of iodized salt became general, that for some reason more patients complained of nervousness and tachycardia after operation, than had previously been the case. Investigation showed that these patients were using iodized salts, and in many such instances the symptoms disappeared when the use of the iodized salt was discontinued. For this reason, in addition to the fact that he occasionally sees cases in which the *primary* development of hyperthyroidism has apparently been entirely due to the use of iodized salts, he advises against the use of this prepara-

tion after operation, and his directions for diet forbid foods containing any appreciable amount of iodine.

In my own experience during the last three years, I have had only two recurrences, that I am aware of, and in only one of these has it been necessary to reoperate. I shall show you lantern slides of this patient). The other case is now apparently responding to x-ray treatment.

The postoperative administration of iodine has always remained an unsettled question in my mind. There is no question but that large doses are indicated immediately after operation. I ordinarily give 50 minims, in tap water, as a retention enema twice on the same day; 30 minims or 25 minims, three times on the day following; then rapidly decrease the dose till a few days after operation the patient receives 10 minims three times a day by mouth, during the entire time the patient is in the hospital.

How long a time iodine should be administered and in what dose is still an unsettled question in my mind, but I am inclined to agree with Means of Boston who believes minimal doses, i. e., as 3 minims daily, may be advisable for a long time. It is a problem which further experience alone can settle, when sufficient data from the important clinics all over the country has been accumulated and analyzed.

Malignant diseases of the thyroid.. Ninety per cent of the cases of malignancy of the thyroid are malignant adenomata, five per cent are primarily carcinoma, and about five per cent sarcoma of the thyroid (Crile). The only way in which the incidence of carcinoma of the thyroid gland can be reduced, is by the early removal of all adenomatous goiters. Surely no adult should be allowed to carry a nodular goiter because of this risk. Whenever a nodular goiter in an adult shows a sudden rapid increase in size, and particularly if this is associated with pain, carcinoma must be suspected. Whenever the malignancy has penetrated through the capsule of the gland the prognosis is universally bad. Fixation of a suspicious gland shows this has already occurred, and in such a case, it is better to resort to x-ray treatment than to attempt radical operation. Following x-ray treatment, the gland gradually becomes more and more hard and the patient may be able to survive for years. In such cases, where the gland is not perfectly freely movable, and where radical operation cannot be advised, one indication for operation may be partial resection for the relief of pressure symptoms, such as marked tracheal compression. Thyroidectomy, followed by x-ray treatment has not been satisfactory in my hands.

INFLAMMATION OF THE THYROID GLAND

A. *Acute thyroiditis.* Goiters are more likely to be affected by acute infection than is the normal thyroid gland. It may result from direct injury to the gland or from general infection reaching the gland through the blood stream. It occurs in typhoid fever, malaria, pyemia, puerperal fever, pneumonia, scarlet fever, and other exanthemata, and from tonsillitis and rheumatic fever, as well as even from severe constipation.

The symptoms and findings are those of acute inflammation generally; i. e., local pain, swelling, and fever. Later, if the abscess lies superficially, and is about ready to rupture, redness appears. The symptoms may become severe when the rapidly enlarging swelling presses on the trachea and the nerves of the neck, producing severe dyspnea, difficulty in swallowing, and pain is severe on swallowing, or on turning the head. The condition may undergo resolution or may result in necrosis and abscess formation. When the condition is caused by rheumatism, malaria or measles, it does not usually proceed to suppuration. When due to scarlet fever, typhoid fever, or puerperal fever, suppuration almost always occurs. When suppuration is not going to take place, resolution is likely to begin at about the seventh to tenth day. At the outset, the treatment consists in rest in bed and hot moist applications.

As soon as the presence of pus is suspected from the local and general symptoms, immediate operation is indicated. Large incisions are demanded to give free drainage. Early drainage is demanded because of the danger of perforation of the trachea or esophagus (with resultant death from asphyxia), mediastinitis, and destruction of the parathyroids, with resulting tetany.

B. *Chronic thyroiditis.* The condition of "ligneous thyroiditis" or "woody thyroiditis" is a very chronic inflammation of the thyroid gland, which does not proceed to suppuration but results in a woody hard swelling of the gland and to adhesions to the large blood vessels and

to the recurrent laryngeal nerve. For this reason it may be very difficult to differentiate it from cirrhous carcinoma of the thyroid. Biopsy, however, shows merely scar tissue with very few cells. The disease is rare, and usually occurs in patients over thirty years of age. The basal metabolic rate is ordinarily below normal, due to the fact that the thyroid tissue is replaced by connective tissue in large part. I have operated on only one case. It occurred in a woman of about sixty. Basal metabolic rate was +35.

Tuberculosis of the thyroid gland. This is also of comparatively rare occurrence, is usually operated on under the diagnosis of mild hyperthyroidism, and the correct diagnosis only established from the microscopic study of the tissue removed.

REPORT OF THE MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS, HELD IN NEW ORLEANS

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SPRINGFIELD, ILL.

The Twelfth Annual Meeting of the American College of Physicians was held in New Orleans, March 5 to 9. This was considered one of the most satisfactory meetings, if not the most successful, in many ways, that has ever been held by the College.

As one of the oldest and most unique cities in the United States, New Orleans has for many years been known as a convention city. At this season of the year the climate is mild, and one can enjoy the warm sunshine out-of-doors without an overcoat. The proverbial southern hospitality is everywhere felt, no effort being spared to make our stay in the city both pleasant and profitable.

Dr. John H. Musser, head of the Medical Department of Tulane University, and Chairman of the Committee on Arrangements, deserves great credit for his work in arranging the program for the entertainment of the Fellows, as well as the splendid hospital clinics that were held in conjunction with the convention during the week. In this he was assisted by the faculty of the Medical Department of the University, as well as the physicians in New Orleans. Clinics were presented by men on the teaching staff of the various hospitals, as well as from other medical centers throughout the country.

Dr. Frank Smithies, President, expressed the appreciation of the College of Physicians for the accomplishment of Dr. Musser and his committee in arranging the program, and declared that the medical education of any American physician is not complete until he has visited New Orleans as a professional student, because here are to be found diseases for clinical study unobtainable elsewhere in the country.

Tulane University, on account of its location, has a department called the Tropical School of Medicine, from which special study and research work is done along the lines of diseases of the tropics, which are brought to New Orleans through its vast shipping trade, as the second largest port in the United States. Of particular interest is the opportunity for studying leprosy, amebiasis, and other tropical and sub-tropical diseases.

The foreign representatives who delivered addresses were Dr. Julius Bauer, Professor of Medicine at the University of Vienna, Dr. Aristides Agramonte of Havana, Minister of Health to the Republic of Cuba, and Sir Aldo Castellani, Professor of Tropical Diseases in the London Tropical School of Medicine, and head of the Tropical School of Medicine of Tulane University.

There were outstanding addresses by Dr. Maud Slye, Associate Professor of Pathology, University of Chicago, on "Cancer," and on "Tuberculosis" by Dr. Allen K. Krause, of Baltimore. There were symposiums on tuberculosis, epilepsy, infectious diseases and diabetes; and interesting discussions on anemias and heart diseases.

Dr. Bauer delivered an address on "Adaptation and Compensation as the Origin of Disorders." He explained that nature, at work in the complex human machine, seeks to adapt the animal mechanism to meet conditions imposed by injury, infection or destruction of organs, and to compensate for any disturbance of balance in the physiological system. The results of systematic adaptation to many disorders may be more distressing than the original cause. He referred to the theoretical impossibility of populations surviving under the starvations of war, but during the World War he admitted that the people of many countries not only lived, but did the impossible by doing it. Glandular adaptation made the war ration a practical thing under

the circumstances. We can only hope to gain complete knowledge of the succession of events in the human body, in order to treat disease competently.

Of the distinguished medical men who were invited to this meeting, none were more welcome or entitled to greater manifestation of regard and gratitude by New Orleans than Dr. Aristides Agramonte, of Cuba. Dr. Agramonte was born in Havana, and received his medical education in the College of Physicians & Surgeons in New York. The story of finding and proving the cause of yellow fever, as told by this the only survivor of the four men who faced death each day during that time, is one of the most interesting in the history of medicine.

Dr. Agramonte explained that prior to the end of the last century nothing of value had been done to solve the problem of yellow fever. He described various fraudulent undertakings by insincere scientists who attempted, through extravagant claims, to capitalize popular fear of the disease, and how unselfish service without expectation of reward in the service of humanity, did more to conquer the plague than the heavily endowed undertakings of avaricious experimentors.

The Mayor of New Orleans mentioned the debt of gratitude that New Orleans owed to the medical profession for wiping out yellow fever, so that they now had a healthy city, giving it equal opportunity with other American cities. Dr. Agramonte was given an ovation in the session, and was hailed as one of the greatest contributors to human welfare and health of modern times. It was very fitting that in the city which had probably been most greatly benefited by his efforts, he should have conferred upon him the degree of Doctor of Laws by the President of Tulane University, and members of the University Board.

One of the outstanding men of the world, as a teacher and his knowledge of tropical diseases, is Sir Aldo Castellani, head of the Tropical School of Medicine. Part of the year he lectures at Tulane, and part of the year in London. Dr. Castellani told of the various forms of mycoses, or diseases caused by fungus growths. He explained that fungus growths were of a slightly more complicated order than bacteria, and that certain fungi were capable of producing powerful toxins which might attack the body externally, or any of the internal systems.

Dr. Castellani has recently had the honor of knighthood conferred upon him in recognition of his distinguished service to the British Government for work in the field of Tropical Medicine.

Dr. Maud Slye received an ovation by members of the College, after reading her paper on the results of nineteen years of experimental work on cancer, done in the laboratory with mice. Over this period of time she kept a careful history of twenty-five generations which included more than 67,000 individual mice of every known breed. She explained that the vastness of her experimental field left no possibility for coincidence, and seemed to prove beyond the possibility of dispute that cancer is not contagious. She showed that the disease in mice follows definitely the Mendelian law of inherited characteristics. It is through this knowledge that she has been able to eliminate cancer from cancerous families in mice in two generations, and it is by this knowledge and its application to the human race that she believes cancer in humans can be just as successfully eliminated, provided the proper records are kept and the proper breeding made possible. Heredity and the laws thereof have been more ignored in preventive medicine than any other scientific discovery, and heredity is the one thing which the theory of evolution means if it means anything.

In order that accurate pathological studies of human cancer subjects may be made available for adequate study of the disease and its elimination, Dr. Slye proposed that the College of Physicians establish a foundation of archives. She stated that two generations of medical men, supplying records of their own studies of cancer sufferers and persons of cancer geneaologies, can account for four generations of clinical subjects, and thus in a comparatively short while, working as an organized science, can accomplish the impossible in making records.

After Dr. Slye had finished reading her paper, it was announced that a committee, for the purpose of establishing a foundation of archives, had been appointed by the Board of Regents, consisting of Dr. A. S. Warthin, University of Michigan, as Chairman, Dr. Chas. F. Martin, McGill University, Canada, and Dr. Frank Smithies, Illinois University, Chicago.

Dr. Allen K. Krause, of Baltimore, gave an address on "The Pathogenesis of Tuberculosis."

He made the interesting statement that tuberculosis is the price entailed by modern man in yielding to the stress and strain of living for his own pursuits under civilization. He declared there is ample reason to abandon the theory taught that primitive people are less resistant to disease than civilized races. Imposed civilization brings to tribal life new factors to which the tribe cannot quickly adapt itself, and whereas the savage may go to a civilized country and adapt himself, he cannot adapt himself to the unbalanced condition following an imposition of civilized conditions upon his own normal circumstances.

In the symposiums on tuberculosis, Dr. Charles L. Minor, of Asheville, N. C., pictured the physician in the treatment of tuberculosis as a psychologist, an inspirational lecturer, and a benevolent despot, who places his patients in suitable climatic conditions under a prescribed regimen of daily conduct and diet. He said there is unfortunately no way of measuring the constitutional and moral resistance of the patient, but we may estimate it reasonably.

Dr. F. M. Pottenger, Monrovia, Calif., read a paper on "The Cause of the Varied Clinical Manifestations in Pulmonary Tuberculosis" in which he discussed the symptoms of tuberculosis as the sounding of the tocsin for nature's battle in the body of the sufferer to destroy the germs of the plague. He referred to Dr. Minor's discussion of the need for a means of clinical determination of individual vital resistance, in order that the cell opposition to the disease might be supported and increased precisely as each case demands.

Tuberculosis was further discussed by Dr. Gerald Webb, of Colorado Springs, under the subject of "Infection and Treatment in Pulmonary Tuberculosis"; Dr. Robert S. Berghoff, Chicago, "Intestinal Tuberculosis"; and Dr. John W. Flinn, Prescott, "A Study of the Differential Blood Count in One Thousand Cases of Active Pulmonary Tuberculosis."

Dr. Louis Faugeres Bishop, New York City, presented a paper on control and treatment of heart disease. He said the proper control of the mental and physical activities of sufferers from heart disease is as important in the field of cardiology as organic therapy carried out through administration of drugs.

In dealing with the fear of death, Dr. Bishop said his method has been to admit frankly the possibility of sudden death, but that of the multitude of people who suffer from heart disease, a very small number die suddenly.

A favorite suggestion for exercise is that the patient walk out of doors before noon daily, and continue up to the point of fairly definite fatigue. The principle that exercise should be taken before the work of the day, and not after it, is an important one. The business man who attempts to take exercise after his day's work benefits little from it.

Dr. Leonard G. Rowntree and Dr. George E. Brown, Division of Medicine, Mayo Clinic, presented a paper on "Studies in Blood Volume With the Dye Method." They are now assembling, in monograph form, the results of their studies during the past fifteen years of blood and plasma volume with the dye method. This was first introduced in 1915 by Keith, Rowntree and Geraghty. The method is by introducing into the circulation a known amount of nontoxic, slowly absorbable dye which remains in the blood stream long enough to determine its concentration colorimetrically. The extent of the dilution of the dye determines the plasma volume.

The increase in plasma volume is noted in the following diseases: Splenomegaly, splenic anemia, cirrhosis of the liver, hemolytic jaundice, and leukemia.

Obviously, more should be known fundamentally and clinically about plasma. The dye method of estimating blood volume as originally introduced is sufficiently accurate for clinical purposes, and is entirely free from danger.

The essayists believe that changes in blood and plasma volume are of sufficient value to warrant the adoption of this study in clinical medicine.

The subject of tularemia was presented by Dr. Walter M. Simpson, of Dayton, Ohio, with a clinical and pathological study of fifteen nonfatal cases and one rapidly fatal case with autopsy.

Dr. Simpson announced that the disease resulted from an organism which attacks rodents, squirrels and rabbits. It is transmitted to human beings by bites from these animals, or by fleas, ticks, and deerflies, which carry the disease just as the mosquito carries malaria and yellow fever.

He stated that one handicap in the work of the disease has been the fact that three out of every five investigators working in the laboratory have been attacked by the disease. These attacks have not been fatal, but have appeared in clinical form of the more serious variety, the course of the illness resembling normal cases of typhoid.

The season of tularemia east of the Mississippi river is the open period under the game laws when the cottontail is hunted and killed; west of the Mississippi the jack-rabbit is also commonly infected with the disease. Treatment of the fever is without serious problems if properly diagnosed, the Doctor said.

Dr. C. S. Holbrook, of the Department of Neurology, Tulane University, presented a patient at the Touro Clinic with paresis. Because he had developed immunity to malaria, it was decided to try rat-bite injection. In a few of these cases, innoculation with rat-bite fever has been tried and proven successful where they have failed to improve with innoculation of malaria. While the blood examination showed that the paresis was present for two years, indicating luetic infection, after the treatment of rat-bite fever injection, it became negative.

Rat-bite fever results from the bite of rats or other animals infected with the organism—spirochetae morsus muris. The organism was definitely isolated about three years ago. It is spirochetal in form, and found in the circulating blood.

After the infection, the incubation period may be from five to fourteen days. At that time there is noted at the site of the bite a sense of fullness with increased intensity, becoming swollen and painful, with involvement of the lymphatics draining the area. This is continued, with paroxysms of four or five day intervals, the disease in the human being probably lasting for several years. One case was reported of eight years duration, with periods of fourteen to twenty-eight days paroxysmal intervals.

The serum for injection as a cure for paresis is made by drawing blood from a live rat which is infected with the organism. Dr. Holbrook stated that live rats are the best test tubes. This method is not considered a cure, but has helped in the treatment. Small doses of salvarsan readily controls the infection.

Opportunity was given the Fellows of the College to visit the Leprasarium at Carville; also to see cases of leprosy from this institution at clinics held each day at the Marine Hospital.

Dr. O. E. Denny, in charge of the Leprasarium, and who held the clinics, stated that because of the increasing interest shown by the medical world in the study of leprosy, and the continual investigation, he believed there would be found an absolute cure for the disease. During the past two years there have been several cases discharged from Carville following treatment—the Doctor said they did not call them cured, but rather arrested, because they did not know if the disease would make its appearance again.

The Phi Rho Sigma Chapter, D. O. A., of New Orleans, gave a luncheon at the old French restaurant, Arnaud's, with thirty-four Phi Rhos in attendance, which made a jolly group. The dinner was arranged by Dr. D. Mogabgab, to whose energetic efforts and splendid hospitality the success of the meeting was due.

Dr. H. Theodore Simon was the toastmaster, who introduced some of the visiting Phi Rhos who made short talks and recited reminiscences of college days.

At the election of officers for the coming year, the retiring President, Dr. Frank Smithies, of Chicago, was succeeded by the President-elect, Dr. Charles F. Martin, McGill University, Canada, and Dr. John H. Musser, Tulane University, New Orleans, was elected as President-elect.

The following Vice-Presidents were elected: First, Dr. Aldred Scott Warthin, Ann Arbor, Michigan; Second, Dr. S. Marx White, Minneapolis, Minn.; Third, Dr. W. McKim Marriott of St. Louis. Dr. George M. Piersol, Philadelphia, was re-elected as Secretary-General, and Dr. Clement R. Jones, Pittsburg, as Treasurer.

The next annual meeting of the College will be held in Boston, under the auspices of the Harvard Medical School, during the week beginning April 8, 1929.

It was impossible for the report of the New Orleans meeting to appear in the ILLINOIS MEDICAL JOURNAL at an earlier date, on account of the program of the annual meeting, and because of the space needed for the report of the business transactions of the meeting in the JOURNAL following.

CLINICAL MANIFESTATIONS OF ENDURANCE (MARATHON) DANCING

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A good deal of public interest was recently aroused by a public exhibition of endurance (marathon) dancing at the Chicago Coliseum. Many were of the opinion that such performances exposed the participants to such risk of physical injury, or even death, that they should not be allowed to continue the exhibition.

Four ultimate competitors, two males and two females, in this endurance contest were sent to the American Hospital immediately following the close of the eleven days' and nights' continuous dancing, with a request from the manager of the Coliseum that I might personally attend to them, possibly because it may have been thought that some condition requiring surgical or orthopedic aid may have developed. Although these patients scarcely came within the province of a surgeon, they offered a unique opportunity to make a thorough clinical investigation in the hospital of the effects of such dancing contests which might be of value as a record. This explains the fact that a report, which is more or less a clinicophysiological one, is offered as a contribution to medical literature by a surgeon.

Of the four final contestants the two females were professional dancers; one of the males was an athlete, the other a mechanic. On arrival at the hospital all four were immediately put to bed. They were all either asleep or very sleepy, and more or less completely exhausted. During their short sojourn in the hospital the condition of each of these patients was very carefully investigated, as far as it was possible, and the accompanying chart and tables give practically all the important clinical findings.

They all rapidly recovered from their fatigue and nervous exhaustion after their first long sleep, and felt so well that they could not be induced to remain in bed or in the hospital for further observation. Patients "A" and "D" left the hospital in good condition the day following their entrance, and patients "B" and "C" on the second day after entrance, also in good condition. Apparently all of them were little the worse for their long period of dancing and loss of sleep.

Chart I shows the temperature, pulse and respiration rates during the time the patients were in the hospital.

Table A gives the general clinical data regarding the patients on admission to the hospital.

Table B gives the findings on Physical examination of the organs thought most likely to be affected by this prolonged exercise. It must be borne in mind that great difficulty was experienced in obtaining these and other findings owing to the exhausted and stuporous condition of the patients.

Tables C and D give the blood and urinary findings.

Particular attention is invited to the low blood sugar content and the diminished white blood cell count in all four patients. These findings rapidly improved after rest. Attention is also called to the low diastolic pressure in all four contestants.

A basal metabolic test could only be made in the cases of the two female patients. In the case of male patient "A" an attempt to take the basal metabolic rate failed owing to his condition, and to the fact that he could not breathe regularly. In female patient "C" the basal metabolism was +8, and in female patient "D" it was +9. On the whole, the two female contestants appeared to have withstood the strain better than the males.

The Chart and Tables contain all the important clinical findings. They are self-explanatory and call for little comment. Those who are interested in the effects of endurance contests of this type can draw their own conclusions from these data. To me it seems extraordinary that such a continuous physical and nervous strain should have apparently produced no injurious effects of importance. So far as could be observed, the prognostications of those who considered such endurance contests as particularly dangerous apparently were not fulfilled.

History shows that in all ages and among all peoples, even the savage races, dancing has been cultivated as a particular means of expressing significant emotions. The national dances of different peoples more or less express their racial characteristics.

Dancing also expresses religious emotionalism; witness the ecstatic dancing worship of Bacchus and Cybele among the Ancients, which amounted almost to frenzied madness. Later on we find the whirling dervishes and in the Fourteenth Century, in Central Europe, religious fervor found its expression in an epidemic of uncontrollable desire to dance, a veritable epidemic of chorea. The disorder known as St. Vitus dance dates from this time. In our own time we have had the Shakers and the Holy Rollers.

In the present day the cult of dancing among young individuals amounts almost to a mania, but it seems to lack the emotional, artistic and religious qualities that characterized similar outbreaks in the past. It seems to be a vent for the pent-up, excessive, nervous excitement due to the rapid rate at which we live.

The particular endurance dancing contest referred to in this report seems to have as sensible a background as standing on one leg for a long time, or sitting at the top of a flag pole.

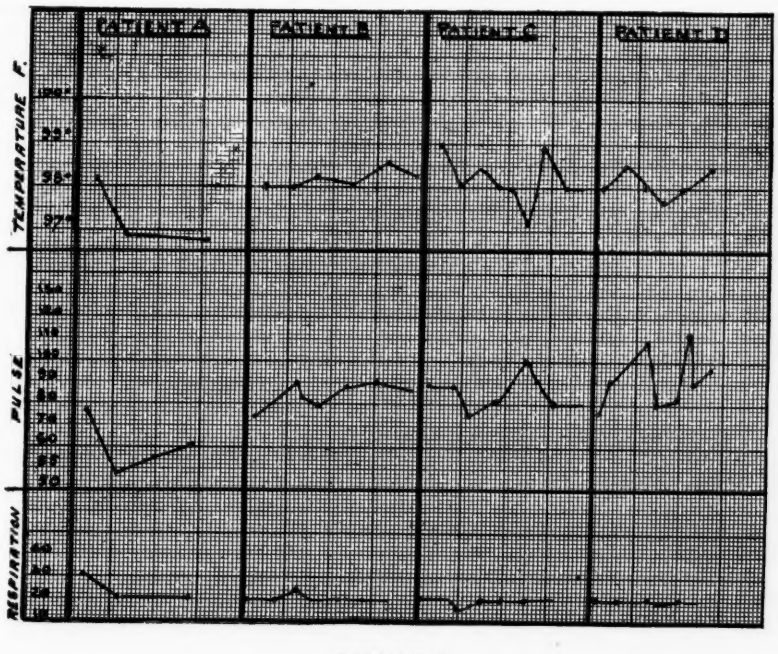

CHART 1

Temperature, Pulse and Respirations of Four Individuals Observed

TABLE A

CLINICAL PARTICULARS OF PATIENTS

Patient	Age and Sex	Weight lbs.	Color	Nationality	Married or Single	Condition on entering hospital Temp.	Pulse	Resp.	Remarks
A	27 yrs. M.	156	White	German-American	S.	98°F.	76	28	Brought to hospital profoundly asleep and perspiring. Danced continuously for about 11 days and nights.
B	26 yrs. M.	130	White	American	S.	98°F.	74	20	Parents Italian. Entered hospital exhausted after 11 days and nights continuous dancing. Perspiring freely.
C	21 yrs. F.	119	White	American	S.	99°F.	88	20	Brought to hospital exhausted after 11 days and nights of continuous dancing.
D	22 yrs. F.	105	White	American	M.	98°F.	76	16	Brought to hospital exhausted after about 11 days and nights continuous dancing. Parents Finnish.

TABLE B
PHYSICAL EXAMINATION FINDINGS

Patient	Condition of Heart	Breath and Respiration	Bones and Joints	Reflexes	Remarks
A	Some downward displacement and to the left; apex beat in 7th intercostal space very pronounced, no murmurs; sounds normal.	Breathing irregular; patient stuporous. Otherwise normal.	Some tenderness in ankle joints; no joint swelling.	Patellar and elbow reflexes normal.	A point of importance in patient A is the fact that he had almost a total thyroidectomy 8 years ago, which evidently had no effect on his power of endurance. Unfortunately basal metabolism could not be obtained upon admission due to lack of cooperation. The following day had his breakfast before another basal metabolism was ordered. Not obtained. Marathon covered on foot 2,500 miles. Runner started out in California and dropped out in Chicago on account of sprained ligament left ankle; two weeks later entered the marathon dance competition.
B	X-ray shows marked heart murmurs could not be detected.	Normal.	Joints stiff, especially hip; no swelling.	Nothing abnormal observed.	
C	X-ray shows slight enlargement; cardiac sounds normal.	Deep respirations slightly irregular; no rales.	Joints sore and tense; muscles of legs more or less rigid; foot and ankle joints swollen.	Neuromuscular reflexes do not show change; muscles somewhat rigid.	
D	Apparently normal in position and rhythm; somewhat rapid action.	Fairly normal.	Nothing abnormal found.	Elbow, 2+ Knees, 4+	Extremities strong.

TABLE C
BLOOD FINDINGS

Particulars of Blood Examination on Entrance to Hospital.	Patient A	Patient B	Patient C	Patient D	Remarks
Red Blood Corpuscles	4,350,000	5,652,000	4,833,000	4,200,000	
White Blood Corpuscles	10,250	13,000	9,300	6,840	
Hemoglobin	75%	85%	80%	75%	
Small Lymphocytes	8%	12%	14%	30%	
Large Lymphocytes	1%	1%	....	3%	
Polymorphonuclears	86%	84%	86%	67%	
Eosinophils	5%	3%	....	....	
(*) Blood Sugar	68 mg.	64 mg.	65 mg.	63 mg.	Per 100 c.c. blood.
(*) Non-protein Nitrogen	21.3 mg.	28 mg.	26 mg.	24 mg.	Per 100 c.c. blood.
(*) Urea Nitrogen	11.5 mg.	13.6 mg.	14 mg.	12.4 mg.	Per 100 c.c. blood.
Blood pressure:					
(A) On Entrance—					
Systolic	116	114	106	98	Taken in bed.
Diastolic	52	62	62	52	Taken in bed.
(B) Following Day—					
Systolic	124	114	118	95	
Diastolic	56	72	78	55	

(*) Normals: Blood Sugar, 80-120.
Non-protein Nitrogen 25-40.
Urea Nitrogen, 12-18.

TABLE D
URINE FINDINGS

Urinary Findings Upon Entering Hospital.	Patient A	Patient B	Patient C	Patient D	Remarks
Specific Gravity	1020	1020	1016	1012	All specimens of urine were voided and only one specimen was taken per catheter and examined.
Color	Yellow	Yellow	Yellow	Straw	
Appearance	Cloudy	Cloudy	Cloudy	Cloudy	
Albumen	Negative	Negative	Negative	Trace	
Sugar	Negative	Negative	Negative	Negative	
Other findings	Few hyalin casts and a few pus and blood cells.	Some phosphate crystals and a few pus cells.	Some mucous shreds and a few pus cells.	Some mucous shreds.	

TABLE E. FOOD AND SLEEP OF CONTESTANTS

Patient	Food	Sleep	Remarks
A	For first two or three days he ate 7 or 8 sandwiches each day; 2 oranges and 2 apples each day; also grape fruit, oatmeal, eggs and chocolate bars. Fruit juices and milk to drink with little water. Abdominal pain occasionally after third day; cathartic taken; only 4 sandwiches per day taken, but other food much the same. Ate irregularly when he felt hungry and while he danced.	No sleep for first three days; on fourth day slept 6-8 minutes every hour; after that slept during the time allowed, which was 15 min. every hour. On 11th day he fell asleep on the floor and was disqualified.	
B	Mostly vegetables and liquid; chocolate bars, water and coffee; appetite poor. Food taken while dancing.	Rested for 15 min. every hour. Bowel movements good.	Feet and ankles swollen and strapped with adhesive plaster. Nervous and tired. Disqualified after 259 hours and 12 min. of dancing.
C	Ate every 2 or 3 hours during the rest interval; food taken consisted of bouillon, milk, coffee, fruits, eggs, vegetable soup, malted milk. Appetite poor. One bowel movement daily.	Slept 7 of the 15 minutes allowed each hour for rest; attended to feet, etc., during remainder of time. Had 2 hours of delirium but preserved clearness of mind.	This patient had trained for the contest by walking and dancing for the previous 15 days. She was in her menstrual period during the contest.
D	Soft-boiled eggs, toast, chocolate bars, fruit, ham and milk taken while dancing.	During the first 7 or 8 days of contest did not sleep at all. Spent part of rest time in changing clothes, washing, etc. Was massaged during first days. Got very drowsy towards end and she and partner both fell asleep while dancing and were disqualified. During the last 2 or 3 days had slept during the rest interval.	

TABLE F. BLOOD PRESSURE

Patient	"A"		"B"		"C"		"D"	
	8:00 a. m.—1:00 p. m.		7:00 a. m.—9:00 a. m.		3:20 a. m.—4:00 p. m.		8.45 a. m.—9:00 a. m.	
(A) On Entrance:								
Syst.	116	124	114	104	108	106	98	95
Dias.	52	76	62	68	64	62	52	55
	9:00 a. m.—1:00 p. m.		9:30 a. m.		9:00 a. m.		9:00 a. m.—4:00 p. m.	
(B) Following Day:								
Syst.	124	124	112	..	118	..	95	110
Dias.	56	56	72	..	78	..	55	72
				8:00 a. m.		8:00 a. m.		
(C) Third Day:								
Syst.	..	..	..	114	..	88	..	..
Dias.	..	..	..	72	..	40	..	..

CHOREA: SOME CLINICAL OBSERVATIONS WITH A SUGGESTION FOR FURTHER STUDY*

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CHICAGO

Everyone is agreed that there is much evidence in favor of the infectious origin of chorea. The frequent association with heart involvement has been noted by many observers and is a powerful argument in favor of the bacterial etiology. Other observers have recorded the relation of chorea to rheumatism and to tonsillitis. At times an actual organism has been isolated from the blood and recently E. C. Rosenow[1] has claimed that not only has he isolated the organism from the nasopharyngeal secretions but has been able to produce the disease experimentally in rabbits. He next prepared a serum against this organism and was good enough to allow me to use some of it on our patients in Chicago at the Sarah Morris Children's Hospital.

The results of this study have been published[2] and so I will allude to them only briefly. The serum was rather disappointing and we saw no great benefit from its use. Of course this in itself is argument neither pro nor con for the

*Read before the Section on Medicine of the Illinois State Medical Society, Moline, June 1, 1927.

1. Rosenow, E. C.: Amer. Dis. Child., 1923, 26, 223.

2. Gerstley, J. R., and Wilhelmi, L. J., Amer. Jour. Dis. Child., 1927, 33-602.

streptococcus origin of the disease, but in this study we became interested in certain of the clinical manifestations. We learned as others before us that the disease is much more common in the Spring and it is much more frequent in girls. I may take this opportunity to call your attention to a few clinical signs usually overlooked. The first is the great importance of the tongue which even in very mild cases gives us a valuable clue. When it is protruded the patient opens his mouth in a rather awkward manner and more widely than is necessary, while the tongue itself shows various twitchings and rhythmical contractions. Another sign described by Adelbert Czerny has to do with respiration. Normally when a child is asked to take a deep breath the abdomen is protruded, due to the increase in abdominal pressure from the diaphragm. In chorea patients Czerny maintains the abdomen is drawn in. I have examined all chorea patients routinely for this sign and it seems present in quite a number, though it is not infallible. The reflexes in chorea are usually increased and if one takes the knee-jerk of an acute case repeatedly, the leg is thrown into a sort of temporary tetanus lasting for a number of seconds. In almost every one of our cases the chorea was worse on one side than the other, a true hemichorea in fact. An interesting clinical observation is the following: Ask the child to squeeze your hand with one of his. If he takes your hand, squeezing it with his right, watch the left hand. If the chorea is worse on the right side there will be little movement of the left hand. If the chorea is worse on the left side, when he squeezes your hand with his right, there will be noticeable associated movements in his left.

The tonsils were objects of our particular interest. We were surprised to learn that the removal of tonsils had absolutely no effect on the course or duration of the disease or in preventing recurrences. In this respect it is interesting to note that previous studies[3] do not absolutely confirm the strict relationship between rheumatism and chorea. Rheumatism does not seem to precede chorea nearly as frequently in the earlier years as it does between the ages of ten and fifteen. In other words, accidental coincidence must play a greater rôle than many are willing to concede. Sachs could find a satisfactory history of chorea coming on after rheumatism in only twenty of 184 cases and Osler found it in 15.8 per cent.

The inability to obtain pathological material in any large number of chorea cases makes the problem much more complicated. However, as encephalitis is so frequently followed by choreiform manifestations, and as encephalitis has a fairly well-known pathology, it is more than likely that the changes in chorea are of the same nature, namely, in the corpora striatum.

It will be seen that though there is much evidence in favor of the intimate association of chorea, rheumatism and tonsillitis, the problem is not entirely clear. There still remains the possibility that chorea is an independent unit occurring in a child with the syndrome tonsillitis, rheumatism and endocarditis.

During the study on the serum there were a number of observations which suggested that we should not be blind to other possibilities. For instance, the occurrence of the disease in the Spring might perhaps relate the condition to changes in calcium metabolism. The emotional reactions might be related to the thyroid. The occurrence of the disease largely in girls suggests a possible endocrine involvement.

Accordingly, during the last year the study has been continued with these points in mind. The patients were subjected to the same rigid physical examination as in the previous study. The search for foci of infection included enucleation of the tonsils and x-raying and correcting pathological conditions in teeth and sinuses. Bacteriologically these patients were as indefinite as those of our first report. In one out of five a streptococcus was isolated from the blood but did not grow on subculture. In this same patient cultures from the tonsils showed a hemolytic streptococcus, from an abscessed tooth staphyloccus aureus, and from the pus of a punctured antrum (courtesy of Dr. S. J. Pearlman) hemolytic streptococcus, nonhemolytic streptococcus and diphtheroid bacilli.

The blood calcium determinations averaged 10.5, i. e., normal. The phosphorus varied from 4.5 to 5.00, i. e., also normal. In this respect the electrical reactions were of interest. In prac-

3. Sachs, B., and Hausman, L.: Nervous and Mental Disorders of Childhood. Paul B. Hoeber, 1926, Publisher.

tically all the C. O. C. was reduced to the neighborhood of 5 milliamperes. This reduction obviously cannot be on the basis of diminished calcium.

Classified according to their metabolism the children divided themselves into two groups, those with a metabolism averaging between 2+ and 4+, and the others with a metabolism between 12+ and 14+. The higher rate of metabolism decreased to normal as the patients improved clinically. Here we have another problem. Is the thyroid itself related to chorea or did we have chorea in children with a tendency to hyperthroidism?

As regards endocrine involvement, a few studies with parathyroid extract (Paratharmone, Lilly) have not been encouraging. We have not tried extracts of the sex glands because of their present state of unreliability.

Incorporated in this work was a social service study of home conditions, and it is of this phase that I wish to speak particularly. Perhaps the best illustration of the importance of the social service worker is the following example: A little boy came to the hospital recently with this history: He had an attack some four years ago, being in the hospital for six weeks. The following year there was a mild recurrence. Last year he had another recurrence and was discharged from the hospital to a convalescent home. At this latter place he remained for four months showing no improvement and now is readmitted to the hospital. He is eleven years of age and there is nothing else of importance in the history except the fact that the tonsils were removed when he was four years of age, some years before his first attack of chorea.

The examination shows a well-nourished, bright and affable boy. He has all the symptoms of a typical acute chorea. His throat is clean and not erythematous. X-rays of his teeth and sinuses are negative. The heart is normal as regards size and sounds and this is confirmed by x-ray examination. He has been in our wards now for about four to five weeks and shows little improvement.

It is cases like this which seem to me suggestive that the relationship between tonsillitis, endocarditis and chorea is not as close as we have been taught. Here is a child who has had four attacks of acute chorea. He shows no cardiac involvement whatsoever, nor has he a history of rheumatism. Is it possible that removal of the tonsils may have prevented heart and rheumatic occurrences and that chorea is an entirely separate entity?

In the meantime one of our social service workers, Miss Sadie Schultz, at our request made a careful comprehensive study of the patient's home conditions. Without going into detail several important bits of information were elicited. The first is a history of consanguinity, the mother having married her first cousin. Here we have a family background. The next is that the mother is of a morose temperament. She was a woman in fairly good circumstances and suffered financial reverses. She dominates her family and is thoroughly dissatisfied with our patient because he is not well and is more nervous than the other children. Apparently she picks on him a great deal. What seems of particular importance in this case is the relation which existed between our patient and his father. He seemed very much more devoted to his father than to his mother and the death of his father some weeks before this last attack had a profound influence upon him. Shortly after the death of his father a baby brother died. This combination of events with the associated sorrow in the home seemed to be factors exciting the last attack. Working upon this valuable clew I made it a point to speak to him a number of times about conditions in his home during those trying days. At the very mention of his father he would burst into tears and the choreiform movements become much more marked.

In order to make the mental side of the study more complete we asked one of our attending psychiatrists, Dr. Edwin R. Eisler, to study the child from the standpoint of mental hygiene. He corroborated our findings and furthermore elicited the information that the little boy was worrying about a quarrel he had with his father some time before, in which he had wished the father's death.

Having established these facts, I ordered a complete change in the child's routine. We got him out of bed in a wheel chair despite the fact that the chorea was by no means cured and I also started some school work. The idea of this was of course first to encourage him, and second, to get his mind occupied with more healthful

thoughts. With this change of regimen he showed decided improvement and became much quieter and happier for a few days. I was on the point of thinking we had made a great discovery when lo and behold he suddenly grew morose, sad, experienced a real loss of appetite which lasted a few days, and physically relapsed into another acute attack of chorea. For three days he refused to discuss his condition. Finally and with great emotion he told us that the anniversary of his father's death would come in a few days and he was heartbroken that he would be unable to be home to say the customary prayers. When we reassured him and told him that we would permit him to go home over those days he showed considerable improvement.

I realize that this is an exceptional case. It is possible that we may be dealing with a masked encephalitis. There is nothing in the findings which enables us to make such a diagnosis. The spinal fluid is absolutely normal in every way and the boy seems a typical chorea. However, the subject of encephalitis opens up too great possibilities for the present article.

The point of this paper is to bring up for discussion a field of thought somewhat neglected in the past. It has no bearing whatsoever upon the question whether chorea is or is not a streptococcus disease. It has, however, a bearing upon methods of treatment. Whether chorea is or is not an infection, clinicians have noted for a long time that emotion not only accompanies the disease but on the other hand intensifies the clinical signs. It seems sensible therefore to use all means in our power to allay the emotional factors. This is a line of study that is often overlooked and one that we are at present pursuing. Every case of chorea, we have at first a very careful physical examination to seek foci of infection; next, a careful social service survey to give us insight into the home conditions, and lastly if we feel there is any indication whatsoever, a psychiatric examination. The work is just starting. I do not know whether it will bring us much or not, but at any rate it does open possibilities for future studies.

In conclusion then:

1. We have found no reason to change the conclusions of our former work, namely, that chorea is not as closely related to tonsillitis, rheumatism and endocarditis as has been generally accepted. There is clinical evidence to suggest that these three conditions may form a triad upon which chorea may develop as an independent entity.

2. The tonsils are not as closely related to chorea as has been taught. Tonsillectomy neither prevents the disease, has any effect upon its course, nor prevents recurrence. In those children, however, who have been submitted to tonsillectomy the chorea seems to be associated with fewer cardiac complications than in the non-tonsillectomized group.

3. Studies have failed to show any change in the calcium blood content in chorea nor in the phosphorus. Studies in metabolism are indefinite and offer little clue to etiology. There seems to be some increase in electrical excitability.

10. While we are awaiting further studies as to the true causative factor or confirmation of the suspected streptococcus we must not overlook influences which may aid or handicap the patient in his recovery. The mental side of the disease has not been studied sufficiently. In all cases this side of the picture must be taken into consideration. The patient must be put at mental as well as physical rest. To do this properly may necessitate a careful study of home conditions and even demand a change of home environment.

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DISCUSSION

Dr. V. B. McClanahan, Galesburg: It appears to me that choreas, along with certain other conditions like hysterias, neurasthenias and a good many convulsive what-nots are merely the little surface waves on a nervous ocean.

Someone some time will lead us into the light about these things and we will be led to see that a great many of these are symptoms while a very few only are diseases. As Dr. Gerstley pointed out, it is practically impossible to get much pathological findings out of these cases due to the fact that a large majority of them are cured or get well.

It is a tribute that I pay to Dr. Gerstley when I say that although very little is known regarding the pathology, and so forth, of chorea, still it is the constant bringing up to our mind and the reassociation of different things which have to do with these conditions which some time will bring us into the true light and will lead us to know eventually what chorea is. At the present time we do not know.

I dare say the average practitioner, when he ob-

serves a case of chorea or is confronted with one in his office, goes through approximately the following regime. I mean this is the ordinary practitioner.

He first observes the nervous state of the patient. He next asks regarding the family history. He next probably guesses as to the severity of the case. He asks how long these things have been going on. He prescribes liquor potassium arsenitis or Fowler's solution, and hopes the case will get well, prescribing that in the same way they used to prescribe quinine for malaria, knowing that it helped but not knowing why.

There are three points I wish to make in this discussion; and the first one is that possibly some day we are going to have our ideas rearranged regarding a great many nervous symptoms themselves which at the present time we are more or less at sea about. The second point is that we practitioners do not, on observing a new case of chorea, study those cases sufficiently. Thirdly, our blind though not unwarranted faith in Fowler's solution as the treatment.

Dr. Charles L. Mix, Chicago: I cannot help but say a word or two in regard to chorea.

The major point in Dr. Gerstley's paper which I think we ought to take to heart is that chorea is a symptom-complex and not a disease. This symptom-complex is not confined to chorea. It is found, for instance, in Huntington's chorea and choreiform movements are also found in paralysis agitans.

The symptom-complex called chorea is due to a disturbance of the lenticular nucleus. Huntington's chorea, for a long time of unknown pathology, has been proved to be due to a disturbance of the lenticular nucleus. And the choreiform symptoms of encephalitis lethargica are also caused by pathology in the lenticular nucleus.

When lethargic encephalitis first appeared I thought it was probably a polioencephalitis anterior acuta, of the Strümpell type. The English regarded it as a form of paralysis agitans because the cases which they saw chiefly involved the lenticular nucleus; whereas those we saw involved chiefly the nuclei of the midbrain. But in almost all of the early symptoms of encephalitis there is a choreic phase in which patients drop things, due to involvement of the lenticular nucleus. Indeed the symptom-complex of chorea is present in cases of ordinary encephalitis lethargica, and there is a distinct choreiform type which looks like chorea.

I believe Sydenham's chorea to be due to bacterial toxins irritating the lenticular nucelus by selective action. I believe the bacteria concerned will some time be found to be a spirillum or a spirochaeta. These bacteria are susceptible to arsenic. Arsenic influences the spirochaete of syphilis, for example, and the spirillum of ordinary Vincent's angina is influenced in general by arsenic. I believe the time will come when it will be found that there is either a spirochaeta or spirillum at the bottom of choreic infection, and that these bacteria will be found to produce a toxin which adversely affects the lenticular nucleus.

I do not believe that the endocarditis of chorea is an integral part of chorea proper. It is true that a great majority, seventy per cent of chorea cases, have endocarditis.

Dr. Gerstley did not seem to bring out that in many instances the endocarditis follows the chorea. When I used to be in the out-patient department at Northwestern University Medical School we used to have chorea cases coming to us. When patients were getting well of the chorea they would return with a systolic murmur coming on subsequent to the disease.

Dr. Victor A. McClanahan, Aledo: I have a patient, a sixteen-year-old girl, with chorea. I remember that Holt or someone said that chorea seemed to have sometimes annual recurrences.

This girl presented a very severe case. It was in the spring that she had this severe attack first. I watched her two or three years and she has had two attacks at the same time of the year, each one lighter than the one before.

Dr. Meyer Solomon, Chicago: This paper by Dr. Gerstley forces home the fact that nervous and mental manifestations with emotional upset associated with organic disease are due to one or more of three main causes: they may result from the organic disease per se; they may be due to an emotional reaction on the part of the patient to his knowledge of the presence in him of organic disease; they may be an emotional reaction to mental conflicts that have nothing to do with his organic disorder.

In organic diseases, in addition to laboratory work, one should pay attention to the emotional, nervous and mental aspects.

Dr. Gerstley, Chicago (closing): Just a moment to answer a few of the points. The doctor who spoke about the emotional side of the disease as being the entire cause did not understand me fully.

There is much evidence in favor of an infectious etiology. Even though the Rosenow serum proved unsuccessful in our hands, even though our tooth, tonsil, pahrynx and blood cultures have not shown much, still we cannot say that chorea is not an infection.

In this paper I tried to emphasize factors which influenced the disease and which we should not overlook while we are seeking the true cause. I did not mean to say the emotional factor was an etiological factor entirely.

Regarding the discussion about arsenic. There is some difference in the use of arsenic between children's men, internists and the neurologists. Children's men have for ten years given up arsenic. We find that placing children in bed and keeping them quiet does about as much good as any form of medication. We find it necessary to keep youngsters in bed for six to eight weeks.

Neurologists are inclined to use arsenic in larger doses of the various arsenical preparations. They claim good results.

The only drugs we use are those that quiet the child, as bromides or luminal. I have seen a number of children develop real intoxications on luminal, so I do not use it much.

SOME PROBLEMS OF THE ROENTGENOLOGIST IN A SMALL COMMUNITY*

H. A. Elkins, B.S., M.D.
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It is indeed a privilege to appear on the program of the first official meeting of the radiological section of the Illinois State Medical Society.

As a representative from one of the smallest counties of the state, namely Wabash, as often sung "On the Banks of the Wabash Far Away," my small city was founded by three Methodist preachers, who gave it the Biblical name of Mt. Carmel. I must admit it is necessary for the roentgenologist to be closely associated with the spiritual advisor in order not to lose faith in humanity while baffling with the daily problems which occur in general routine of duty.

Thus the subject "Some Problems of the Roentgenologist in a Small Community." (Please note the use of the word roentgenologist in place of the commonly used misleading term radiologist, as the public associates the latter with radios and quite naturally classify us as radio operators.) I fully appreciate that the metropolitan roentgenologist has problems many and varied, but I shall not endeavor to explain his difficulties as he is in a different sphere.

The first problem to confront a physician in operating an x-ray laboratory is that of obtaining necessary equipment which should be of standard make. The second is the installing of that equipment in the arrangement most convenient for the type of work you are doing or expect to do. The manufacturer can be of great assistance to you in planning your installation; however, there are individual requirements necessary for you to decide.

After installation you think your troubles are over, but to your surprise, new ones begin, patients are few and collections bad. As soon as it is known you are devoting your time to x-ray work, your friends will come around and in a quiet whispered voice say, "Doctor, aren't you afraid to fool with that thing? I just read where someone had died a martyr to x-ray, and by the way, Dr. Brown burnt a woman."

Thus the roentgenologist should refer to such burns, as x-ray reaction or dermatitis, as the public doesn't like to get burnt. As a roentgenologist depends on work referred to him by physicians of the locality it is necessary to educate them as to the nature of the work for x-ray; this need for education, however, does not reflect on the general practitioner's ability, since he began his medical career in the pre-x-ray days and has not been able to acquire such knowledge until recent years. I find the "Radiological Review" edited by Dr. Swanberg of Quincy an excellent publication for the general practitioner. Dr. Swanberg deserves much credit for the initiative of placing this journal before the profession.

Likewise the laity is realizing the value of x-ray diagnosis and therapy, and patients will come of their own accord for G. I., etc.

In such cases we inquire as to the patient's physician and inform the patient that it is necessary for us to consult him and obtain his permission before we do the x-ray work, and that our findings will be reported to the attending physician.

Quite another problem confronts us regarding the work of industrial patients who come maliciously for x-ray of injury not wanting the attending physician to know of the x-ray. We adhere to the strict rule not to x-ray any injury without the permission of the patient's physician.

Neither do we give films to the patients. In some cases patients maintain they have paid for the films and request them. We meet this situation by explaining to the patient that he is paying for the diagnosis and not for the films. If the patient further insists a copy of the film can be ordered.

We think this ruling is a timely one, and a good one for the following reasons:

1. It prevents the loss of films.
2. It makes possible the location of films whenever needed
   (a) For comparative study with previous examination.
   (b) In case of legal action.
   (c) In preventing misinterpretation of films by unqualified physicians and cultists.
   (d) For assistance in establishing a radiological library.

Some think an x-ray is no more than a picture-taking process, and that an irregular practitioner who has an installation is just as com-

*Read before the Section on Radiology, Illinois State Medical Society, Moline, Illinois, June 1, 1927.

petent to do x-ray work as you; they do not realize that the interpretation is important, all they see is the photographic angle.

In therapy you find patients skeptical as to the results of treatment and his first question will be "Do you guarantee a cure?" To such a question we reply, "Does your physician guarantee to cure your pneumonia? We expect your condition to respond to treatment as do the majority of those indicated for x-ray. As we are anxious for good results we would not treat your case if we did not think it would respond to treatment."

So it is from day to day as we meet the various obstacles which in turn make our work a pleasure by the apparently miraculous results obtained in innumerable cases seeming doomed to a life of suffering and destruction.

DISCUSSION

Dr. E. S. Blaine, Chicago: The Chair wishes to remark that he sees little difference in the problems of the roentgenologist who practices in the small community from those encountered by the roentgenologist who practices in the large city. I see a great deal of similarity in the situations with which we have to contend; it is largely a matter of volume of work and number of individuals (physicians and patients) that one has to try to satisfy with service.

Dr. Alden Alguire, Belvidere: I commenced about twenty-nine years ago and have gone through all Dr. Elkins has brought up. I came to this section a little bit late. Was very interested in the scientific paper I heard, as well as the paper by Dr. Elkins. I do not know that his town is any smaller than mine. For years I had the only x-ray apparatus in the community until the Chiropractors came into town. We have cleaned the Chiropractors out. One of them got to bootlegging in connection with the x-ray, a poor combination. Your President, the other day when I was up in this section, made the most pertinent remark I have heard in a long while. He said: "No man had the right to touch an x-ray machine and interpret a picture except a trained physician." In our town we had a man who came in and took the town by storm, stating that x-ray work was of no value. There was an instance of where it cost an insurance company hundreds of dollars to have a fractured femur properly reduced after the fellow who knew all about everything had attempted reduction. There was no union. Since that time he has learned that it is necessary to have radiograms of fractures.

The value of x-ray is becoming quite well known to the people and particularly in a supposed fracture or bone trouble of any kind. As yet they are not educated sufficiently to understand that we do not see all of the tissues and pathological conditions as easily as we do bones, and they ask for an x-ray for all sorts of things. The comical side of the layman's notion is that he insists upon seeing the radiogram and will very often tell you all about it. We still have very many doctors whose conception of x-ray work is on a par with that of the layman. Some of the doctors are commencing to see that roentgenology in all its branches is a very difficult and highly technical study and are leaving at least the interpretation to one who has had a greater experience in that field.

We have been told a great many times, "Do not use radium if there is pus in the abdominal cavity." I treated a degenerating fibrosis of the uterus with radium with the usual good success. Within one month her physician insisted upon removal of the uterus. I was present at the operation and saw the surgeon enter a large sack of sterile pus in the abdominal cavity. This operation was within six weeks after the radium treatment. Unfortunately the patient died of hemorrhage on the table. I cannot help but think we are as a whole too conservative as to the amount of either x-ray or radium used in many of our cases, especially cancer.

There are many things, and many of them comical, that Dr. Elkins has gone through and will continue to experience as have all of us who have been for a number of years interested in roentgenology either as a specialty or as having given special attention to it because of its inestimable value as an aid to medicine and surgery in general. He has a glorious work ahead of him, and in time when both the doctors and the layman become better acquainted with his work he will reap his reward.

Dr. H. A. Elkins, Mt. Carmel: I thank the doctor very much for the discussion. He appreciates my position. I think, as roentgenologists, we must bring x-ray before the medical profession all the time. I happen to be secretary of the county society and am rather handicapped. I can not always get programs on the x-ray. I think in all county societies where it is possible and where the roentgenologist is a member of that society he should keep some x-ray work before the society all the time.

FACTS AND FANCIES REGARDING THE USE OF X-RAYS IN PROGRESSIVE MEDICINE*

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CHICAGO

It is common knowledge that x-rays are useful in the modern practice of medicine, but misconceptions concerning its use and value are not infrequent. It is generally known that x-rays are invisible but it is not so well known that they are not directly demonstrable by any of the five human senses. It is a fact that these interesting and very useful rays are not recognized by

*Given for the Educational Committee over Station WGN, January 24, 1928.

seeing, hearing, feeling, smelling or tasting. How then do we know that x-rays exist? By visible evidence of the effects they produce. There are four different manifestations; first, the physical effect that they have on certain substances which glow or fluoresce into visible light; second, the physical effect on photographic emulsion, celluloid film or glass plate, but which is not evident until it is chemically treated in a photographic dark room; third, by the biologic effect they produce on human tissues; fourth, by the changes they produce on gasses or the air through which they pass.

Of these four modes the first is "fluoroscopic" which is in daily use and practical application in medicine by means of a fluoroscope. This term refers to the fluorescing surface or screen upon which certain shadows appear when any part of the human body is intersposed between it and an x-ray tube in action. These shadows are so weak they cannot be seen under ordinary daylight conditions but require a totally darkened room for visualization and then only after full and complete dilation of the pupils of the observer's eyes. It is impossible for one to pass directly from a sunlit room into a totally darkened fluoroscopic room and immediately recognize any shadows on the screen. It requires from five to fifteen minutes in the darkened room before the eyes are in proper condition to proceed with such an x-ray examination. X-ray fluoroscopy is very useful in the study of those parts of the body where motion plays a part, such as the lungs, the heart, the stomach and the intestines. Occasionally it is useful in the reduction of fractures and in the location of foreign objects such as needles, pins, bullets, etc. It is a fact that there is a certain amount of danger in the use of the x-ray fluoroscope, more to the x-ray physician examiner than to the patient; therefore, the wise physician reduces the time of fluoroscopic studies to an absolute minimum. The ever present dangers of the x-rays themselves as well as of the high tension electricity necessary in producing them, is one of several reasons why one in need of x-ray service should avoid the layman x-ray technician and seek a skilled medical x-ray expert. Unfortunately, the laws governing the protection of the health of the people of the State of Illinois do not protect the unsuspecting public from these dangers; anyone with an x-ray equipment is permitted to use it on human beings whether qualified by training or not. The interpretation of x-ray fluoroscopic shadows is a special medical service which requires the skill of a qualified physician; the layman has not had the training necessary to enable him or her to give fullest value to the x-ray shadows.

The second form to x-ray work which I have mentioned is "graphic." This gives us shadows of human structures such as the bones, joints, muscles and organs, on the emulsion of silver salts spread on a celluloid film; this is similar to the ordinary photographic negative. These x-ray film shadows, unlike the momentary and fleeting shadows of the x-ray fluoroscope, are permanent records which can be studied at length, compared with other x-ray films of the same or other cases, interpreted without haste and then can be filed away for future reference, recheck and restudy, if necessary. Of these two forms of x-ray work, that is the fluoroscopic and x-ray film record, it is obvious that the film method is the more costly as it requires considerable outlay in special materials and in skilled labor, but the increased cost is overwhelmingly offset by the greater certainty of the diagnostic conclusions that can be drawn from the shadows as well as in the permanency of the tangible record obtained. The competent x-ray physician who has the best interest of his patient in mind will render a maximum service by x-ray interpretations based on more x-ray films of larger size than is the common practice in many places and particularly in the commercial x-ray laboratories. This is especially true in x-ray examinations of the stomach and the intestines, usually called a gastrointestinal x-ray study, where too often the patient is subjected to a prefunctory fluoroscopic observation of practically no value medically, (most often made by a non-medical technician), supplemented by one, sometimes two, x-ray film exposures. Obviously such incomplete and incompetent work can be made for a much lower fee than can a reputable, experienced and conscientious x-ray physician, who does not charge for x-ray pictures at so much per view, but whose fee is made for an expert opinion which is based on x-ray shadows. Patients do not buy pictures as is done in photographic studios, a mistaken idea that many have. The number of x-ray film exposures made by different x-ray physicians varies, but the most

careful of these use from 15 to 25 films in a complete study of the gastro-intestinal tract and such examinations cover a period of at least three days and sometimes more. It is a mistake to think that any layman possessed of an x-ray machine is an "x-ray expert," although this is not generally known. Neither is the quality of an x-ray film a safe criterion of the ability of the x-ray physician. The x-ray technician is frequently a trained nurse who has had considerable experience in the handling of the sick and ailing. Through their contact with the x-ray physician under whom they work, they acquire more or less knowledge regarding the medical meanings of x-ray shadows but the ethical x-ray technician steadfastly refuses to give out opinions, interpretations or x-ray diagnoses, realizing full well that only the physician especially trained and skilled in the x-ray art in medicine is competent to give opinions or make such interpretations. The layman x-ray worker is not qualified or competent to make x-ray reports and therefore, should not be expected or asked to do so. Notwithstanding the fact that making such x-ray diagnoses is a part of the practice of medicine, and therefore the rendering of x-ray interpretations or reports by laymen is unlawful; nevertheless such practice is permitted, abetted and tolerated in certain quarters, even some hospitals of Chicago being guilty of this irregularity.

The third form of the practical use of x-rays is "therapeutic" or the treatment of diseased conditions by applying the x-rays. In the early years of the development of the x-rays it was noted that under certain conditions of x-ray exposure, changes occurred in the skin and underlying tissues which oftentimes were entirely unlooked for and frequently were wholly undesired, so much so that the x-ray injuries and damages done, brought the method into some disrepute. However, there frequently resulted a more or less complete disappearance of certain skin diseases and the cure of some malignant tumors. Further search revealed the fact that certain diseases, the result of derangements of the structure and the function of certain organs and glands, were benefited by x-ray treatments. Carefully developed x-ray exposure formulae today enable us to treat many conditions which do not respond to other known therapeutic agents. Thousands of patients receive x-ray treatments daily for the relief of such conditions as eczema, itching skin conditions, certain warty growths, some chronic skin ulcers and also in superficial malignancies, skin cancers and the like. In breast cancer it is often found to produce a regression of the growth; at other times it arrests the progress of the tumor, bringing it to a standstill for a greater or lesser period of time. X-ray treatment of deep seated cancers with highly penetrating x-rays is not sufficiently successful as yet to permit us to view the results with any material degree of satisfaction, but at least we have demonstrated the fact that it is of some benefit in making the victim of this dread disease more comfortable and in reducing the discomfort of those in contact with such patients. Occasionally the results warrant us in stating that a cure was obtained. This branch of x-ray work requires the greatest care and skill on the part of the x-ray physician. Unlike the state laws governing x-ray work for diagnosis, the giving of x-ray treatments by lay x-ray workers is prohibited, although here too this unlawful practice is tolerated in some quarters by otherwise ethical physicians. The use of x-rays in massive quantities, using x-ray equipments which produce rays of at least 200,000 volts potential is necessary in the attack on deep seated cancer. To treat such cases with the ordinary x-ray machine of less than 140,000 volts, is similar to attempting to put out a fire of a large building with a stream of water from a garden hose. Therefore, x-ray treatments to be of value to the patient with deep seated cancer must be given with voltages of 200,000 and over. In certain cancerous growths, x-rays are used in conjunction with radium with considerable benefit.

The fourth form of x-ray use which I mentioned is of academic and technical interest only and will be of little interest to a radio audience and therefore will be passed over.

To summarize I leave these facts with those listening in.

X-rays applied to the human body are potent for much good in diagnosis and treatment.

An x-ray examination is not attended by any such happenings as electrical shocks to the patients, the appearance of lightning, of flames, jolts or other fancied disagreeable events.

X-ray dangers lie in the possible damages resulting from the incompetency or inexperience

of non-medical x-ray workers in commercial x-ray laboratories.

X-rays used in diagnosis and treatment should be applied only by physicians skilled in this special medical work.

The commercial x-ray laboratory owned and operated by laymen should be avoided by physicians and patients, as not in the best interest of the sick seeking medical help and relief.

Periodic health examinations by the family physician, assisted by proper x-ray studies offer the best safeguard against disease.

5. S. Wabash Ave.

THE EARLIEST SYNDROMES OF PULMONARY TUBERCULOSIS. THE PRODROMAL PRECLINICAL, CRYPTIC OR MASKED SYMPTOMS. THE YESTERYEARS SIGNS AND SYMPTOMS OF TUBERCULOSIS*

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CHICAGO

The early diagnosis of pulmonary tuberculosis or better early diagnosis of clinical tuberculosis because there are no definite signs or symptoms demonstrable in clinical tuberculosis, this only when body changes have been brought about by the presence of the tubercle bacillus in the human body.

Clinical tuberculosis pictures itself throughout the entire course of the disease as the antagonisms, the warfare between the active working tubercle bacilli in the organism on the one hand, and the resistance offering body cells on the other. The entrance or implantation of the tubercle bacillus into the human body is not sufficient to bring about tuberculosis. Other necessary factors to produce the disease must come into play;—hence the number of entering bacilli, their virulence and the favorable tissue soil offered by the human body must all be considered.

A normal organism may not be able to resist the entrance of disease producing bacteria but it may inhibit the implantation of micro-organisms by offering to these entering germs an unfertile soil, "a locus majoris resistencia."

When tubercle bacilli enter the human body, assuming the respiratory route, they may find ready lodgment, begin to grow and multiply and by elaborating a poison may produce noticeable symptoms or they may be expelled from the body without implantation or if implanted may become encapsulated, undergo calcification, may be destroyed or may become harmless foreign bodies. In a great many instances, however, the implanted germs become what is known as active, do not remain latent or passive and this then is followed by what is known as pulmonary tuberculosis. When tubercle bacilli first enter the human body, the organism may not offer any resistance, is passive to the deposition and we have no evidence then that tubercle bacilli are harbored within the body. After a lapse of time, perhaps many days or months, and after a period of bacillary quiescence, the implanted bacilli begin to grow and multiply and due to the elaborated toxins begin to arouse the body cells and these cells now offer an active resistance and from this time hence the antagonism between the invading tubercle bacilli and the fixed body cells is established.

We must now closely observe the truism that implantation is not infection and that infection is not disease. With the first evidence or sign of resistance offered by the body cells against the invaders we say that the individual is infected and not before; hence, infection only begins at the moment when the body has become cognizant of the presence of bacilli in the tissues and has protested and the bacilli on the other hand have resisted this intrusion of the body's defense powers. Up to this time the body was passive, took no notice of the bacilli harbored within its

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confines but now the body cells have developed an active campaign against the invaders and this now designates the body as being infected. However, it is as yet not diseased; tuberculous disease begins only when definite body changes, when tissue changes, have become established in the various organs of the body; hence, by implantation we understand the lodging of tubercle bacilli in the human body where they may remain quiescent for a longer or shorter period gradually becoming active, that is, beginning to grow and multiply. This now arouses the defense agencies or powers of the body and with this arousing of the body's defense powers we say that the body is now infected and after a shorter or longer time the tissues begin to show the effects of this antagonism and with interfered functioning, body disturbances and slight necrosis the individual is now classified as being tuberculously diseased as well.

Tuberculosis from the onset, that is, after implantation, has but two phases, the preclinical and the clinical. At the preclinical, that is after implantation, latency and perhaps up to the beginning of infection there are no signs or symptoms which make us suspect the presence of tubercle bacilli in the human organism. With the activating of the disease, the passing of its latency, that is with infection at first very obscure and indefinite, signs will become noticeable and these signs can only be demonstrated after repeated physical and biological tests and this usually can only be elicited by the physician who has had many years of efficient training in tuberculosis. A little later on when the body's defense powers have been aroused, the signs become more definite, the making of the correct diagnosis becomes somewhat easier and the physician finds no difficulty in formulating his conclusions as to the nature of the body disturbance. This is usually in what is then known as the first stage and as the disease progresses with the extension of the process all the signs and the symptoms become so plain and pronounced that usually the layman can make the diagnosis. With the passing of the latent infection into the active form of the disease the problem of an early diagnosis becomes a most important factor and here, at the onset, not a single symptom is sufficient for an early diagnosis of the disease and all subjective and objective signs must be carefully considered.

In the earlier cases of clinical tuberculosis the diagnosis is most infrequently made and here we find very often that the history of the case, the physical examination and the roentgenological picture are all insufficient to clinch the diagnosis. In such instances it depends a great deal upon the training in the examination of the chest, upon the interpretation of the various physical signs and upon the good and uninfluenced judgment of the examining physician. We must always bear in mind that so long as tissue changes have not yet taken place, that no evidence of infection can be demonstrated in the human body no matter when the implantation took place. When the clinical stage has arrived, definite at first, perhaps very meagre, signs and symptoms are noticeable and the very early anticipation of these various signs constitutes an early diagnosis. In the preclinical stage usually nothing is observed by physical examination. However, this all begins to change when the body has resisted the invasion and the individual becomes infected and generally the two noticeable signs are primarily the lability of the pulse and the difference of the temperature curve from the normal. This lability of the pulse, especially if continuous and rapid, and not accompanied by much fever and by very little pulmonary involvement must be considered the very earliest sign. As this lability of the pulse usually accompanies the tuberculous process throughout, it is also observed in healed lesions, in latent and in inactive processes and after scar tissue formation. The toxins, elaborated by the growth and multiplication of the tubercle bacilli in the organism, circulating in the blood stream begin to irritate the harmonious action of the heart. The heart is no longer rhythmical, is irritated; this one of the earliest signs pointing to tuberculous disease and with the toxins in the circulating fluid the temperature begins to show signs of disturbance, and a slightly higher temperature rate is at first noticeable in the late afternoon hours. These two signs, lability of the pulse, arrhythmia and a slight rise in temperature are the first noticeable signs of infection and beginning tuberculous disease.

These two signs now remain throughout the whole course of the disease from the very beginning and up to *ad exitus,* increasing or decreasing with each exacerbation or remission until late in the course of the disease when the body must take cognizance of the fact that it no longer can

cope with the invaders and its toxins and the body as a whole now passively submits to the inevitable and the heart being no longer irritated or excited, the pulse drops to normal and below, the temperature drops proportionately and for weeks may remain at that level before the close of the scene.

Incidently it should be mentioned here that, in the suspected tuberculous, rectal temperature readings are the only dependable notations. Axillary and mouth readings should not be resorted to because the variations may be so slight as to enter a miss registration.

Another frequently observed sign following in the train of intoxication with the toxins of bacillary growth, is fatigue. Tired without any assignable cause, tired on going to bed, tired on arising, tired on the least exertion; an early sign long before physical signs are demonstrable. Other signs all pointing to intoxication and which should arouse our suspicion are loss of strength and endurance, loss of appetite, disturbed sleep, nervousness, neurasthenia, menstrual disturbance. All these and many more are the result of the toxin or poison given off by the bacilli during their growth in the human organism and the circulating of this poison in the blood stream. Another sign usually of the same origin and very often overlooked or treated very lightly is orthostatic or cyclical albuminuria; albumin in the urine when the body is exercising and not when the body is at rest. The urine passed on rising is usually negative for albumin but after free exercise albumin can be found in the urine. This is also of toxic origin and when found in the young before or about at the age of puberty, deserves the closest consideration, and often cases of joint rheumatism which are frequently observed in the youth, particularly at the time of beginning puberty, may be of tuberculous origin, a symptom of tuberculous intoxication and here an intradermal injection of tuberculin may be very satisfactorily used to clinch the diagnosis.

More or less moisture is produced as the clinical tuberculous process extends and in the area where the bacilli are deposited and are growing, this usually about the air cells of the lungs at the parenchyma. This is known as an exudate and flowing into the smaller bronchial tubes and gradually into larger ones, an irritating cough is produced. This slight cough is usually always present when the disease shows a tendency to spread. In the very early stage when a cough is not always present, perhaps only an occasional hack, it is advisable to examine the apecies of the lungs for more or less dry crackling sounds, usually inspiratory. These crepitating or crackling sounds, if persistent and not evanescent, are the most valuable signs of early disease; they are pathognomonic of pulmonary tuberculosis. We must here bear in mind that crackling sounds or rales with a negative sputum picture may point to closed cases of pulmonary tuberculosis. Sometimes crackling sounds in slight cough can not always be brought about; in such instances resorting to a little artifice will bring results. This is known as auscultating the cough. The patient is asked to take a deep breath and then fully breathe out but just before the next inbreathing to cough thus with the next inspiratory phase crackling sounds may be elicited. It is not ausculating the cough, as it is termed, but the inspiratory phase following the cough. Attention should be called to a pulmonary disturbance, perhaps at first mildly and very little noticed, this is the condition of the lungs known as "bronchial catarrh." There may not be a single symptom only a slight bronchitis. This should receive our most careful attention and periodic examinations, tuberculin test, roentgenologic picture and a close history taking are here indicated.

Pleurisy in a young individual, even in middle age, should be looked upon as suspicious. It may be an early sign of pulmonary tuberculosis, notwithstanding the fact that tubercle bacilli are not demonstrable in the withdrawn pleural fluid and although nothing is demonstrable in the lungs. Sooner or later nearly all such cases of idiopathic pleurisy become tuberculosis and months or years may pass and from this primary pleurisy active pulmonary tuberculosis inevitably will follow. Hence all pleurisies must be treated from the onset as tuberculosis, increasing the body resistance to avoid activations of the process. Many records show that pulmonary tuberculosis has followed pleurisy in from ten to twenty years.

Hemorrhage is usually a late symptom but it may be the earliest, the patient being in apparently good health when suddenly, like out of a clear sky, bleeding from the lungs is present. In most instances, it is evidence of a healed lesion with a cavity, perhaps of many years. If it is the initial symptom a careful chest exami-

nation after the hemorrhage has subsided should be made and a good roentgenologic picture taken to confirm our suspicion and the patient must remain under contant observation.

Many of the symptoms enumerated above may manifest themselves at a period in the tuberculously infected individual when little or no anatomical changes have yet taken place, and by physical methods we are not yet in a position to demonstrate organic lesions; the clinical picture is still obscure or may be quite negative. However, when clinical tuberculosis is once definitely established, then both the subjective and the objective symptoms are present. Subjective—those observed and noticed by the patient, the objective—those signs which are observed by the physician while examining the chest of the patient.

The great problem of an early diagnosis in pulmonary tuberculosis is at the time of the passing of a latent infection into the active or clinical form of the disease and to notice if the disease is progressing slowly or more or less rapidly. This is so important in the treatment and in the prognosis. If we observe more closely the functional disturbance of individuals coming under the physicians' care many more cases may be diagnosed as tuberculosis in which the infection and the subsequent disease had never entered the patient's mind and was never suspected.

5 South St. Louis Avenue.

EPILEPSY

A Preliminary Report of a New Idea Concerning the Cause and Treatment

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Epilepsy is one of the oldest diseases known in history. It dates back to the time of Julius Caesar, which was about fifty years before Christ. Julius Caesar himself was a victim of the disease.

In Shakespeare's "Julius Caesar" his affection is called "falling sickness." They speak of his giving a loud cry, of falling to the ground, of frothing at the mouth. Then they say, "When he came to himself," which evidently means a loss of consciousness. These same symptoms are typical of our present day epilepsy.

Numerous papers have been written on this subject and many theories advanced as to the probable cause of the epileptic convulsion, but as yet the actual cause of the seizure is unknown.

In April, 1926, while working as junior physician at the Cook County Infirmary at Oak Forest, I became interested in the large number of cases of epilepsy in that institution.

I secured permission of Dr. J. J. Minke, head physician, to do some special work on these cases, and with the aid of Miss J. Agnes Mulroy, pathologist at the institution, I examined a selected number of cases.

The laboratory examinations made on each case were blood Wassermanns, complete blood counts, complete urinalysis, feces examination for intestinal parasites and duodenal and biliary tract drainages. A physical examination was made on each case, and the personal history was taken.

The laboratory findings were: The urine in most cases was negative. The blood counts were normal, with the exception of a slight leucocytosis, ranging from ten to fourteen thousand, found in a few cases. The Wassermanns were negative, with the exception of one case.

About twenty-five cases were examined for intestinal parasites, and without exception, every case showed entameba histolytica.

About one-half of the cases examined showed a combination of parasites. In one case alone, six varieties of intestinal parasites were found; namely, entameba histolytic, entameba nana, entameba coli, trichomonas, cercomonas and the cysts of gardia or lamblia intestinalis, although no active lamblia were found. Other cases showed two and three varieties of the aforementioned parasites. Only one case of active lamblia was found in the twenty-five cases examined.

No test meals were given, but in draining the duodenum and biliary tract, the fasting stomach contents were aspirated and examined for hydrochloric acid. Most of the cases showed a hyperacidity. Two cases showed no HCL. A few amebae were found in the alkaline stomach contents, but none were found when HCL was present.

In the duodenal contents and in the gall-bladder and liver bile, numerous amebae were found and they were especially numerous in the abundant mucus that was found in all these cases. The gallbladder bile obtained was normal in amount, but very dark brown in color, almost black, in some cases.

The entameba was the only parasite found in the upper intestinal tract with the exception of one case. This was the case in which the lamblia were positive in the stool examination. This same parasite was found in great number in the upper intestinal tract, and especially in the gall-bladder bile. The lamblia were very active and very hardy; that is, they were active an unusual length of time after leaving the body.

The personal history in these cases ranged from a history of epileptic seizures, beginning in infancy and continuing all through life, two cases in which the initial convulsion appeared in adult life and even in middle life. Without exception, they all complained of intestinal disturbances; that is, of constipation or diarrhea, of certain kind of food, and of overeating increasing their spells.

The physical findings did not show anything special. Almost all the cases showed tenderness over the abdomen. The mentality of the patients varied, depending a great deal on the duration of the disease. Most of these cases showed a mental deterioration.

The only uniform findings were the convulsions, the history of intestinal disturbances, and the finding of entameba in one hundred per cent. of the cases.

Working on the theory that the epileptic seizures were probably caused by auto-intoxication from a poison or poisons originating in the intestinal tract, I decided to begin treatment by trying to rid the intestinal tract of the parasite.

I followed the method used very successfully in the Veterans' Bureau Hospital; that is, passing duodenal tube or catheter and injecting Neo-salvarsan, dissolved in distilled water, directly into the duodenum through this tube. I also gave intravenous injections of Neo-salvarsan.

After two or three treatments, the parasites disappeared entirely from the stool but were still very numerous in the upper intestinal tract; so we discarded the stool examinations, but continued the duodenal drainages, as a means of watching the progress of the treatment.

In studying the ameba found in the upper intestinal tract we noticed that the parasite was inactive and that after a certain time outside the body, the cell ruptured or seemingly exploded and gave out one or two small nuceli or cysts; again there were a number of minute bodies that scattered as the cell exploded, floated along and gradually disappeared into the stream.

I now began daily inunctions of mercury, letting the patient rub in 30 to 40 grains of blue ointment every night, watching his teeth very carefully so that no salivation would occur. I also gave 5 or 6 intravenous and intraduodenal injections of Neo-salvarsan. I discontinued this and gave arsenic trioxide by mouth in doses starting with grain one-thirtieth increasing until grain one-third was given in 10 days. I repeated this five times with no apparent reaction.

I gave mercurochrome by mouth in two grain doses for one month, but the patient showed beginning symptoms of salivation so I discontinued the treatment. I also gave mercurochrome intravenously to a few of the cases for a short time, but decided I was getting as good or better results with mercury inunctions, so I discontinued the mercurochrome but kept up the inunctions for several months. After the mercury inunctions were well under way we noticed that the ameba in the upper intestinal tract had become active, putting out pseudopods and changing shape also making some progress across the microscopic field. They were much more friable, however, breaking up and disappearing more quickly than heretofore.

The parasites gradually grew less in number and the mucus decreased. After five months of daily inunctions of mercury, the parasite had almost disappeared from the upper intestinal tract, only an occasional one being found in the gall-bladder and liver bile and in the small amount of mucus that was left.

The patients, from the beginning of this treatment, showed improvement in general appearance, were more mentally alert, said they felt better, etc. The epileptic seizures were of shorter duration and the length of time between seizures had increased. Although the improvement was general, the convulsions had not entirely ceased in any one patient.

Dr. Helen B. Flynn, School Physician with the Chicago Health Department, volunteered to inoculate a guinea pig with the blood of an epileptic patient taken during a seizure. After a period of two weeks the pig was brought to the laboratory. It had lost weight and was very sluggish in action. Dr. Flynn reported two inoculations given. The pig revived somewhat and gained in weight after being returned to us, so

two more inoculations were given at three-day intervals. The first one was given subcutaneously in the abdomen. The second was given in the plural cavity. At the end of one week the pig died. A post showed a lung abscess, also fluid in the abdominal and plural cavities. All other findings were negative. Smears made from the abscess and the abdominal fluid showed a large organism resembling staphylococci. We attached very little importance to this at the time.

In making a study of fresh blood cells taken from a patient during a convulsion, we noticed a greatly increased ameboid action of the white blood cells. This ameboid action was also found in blood collected between convulsions. At first we thought it might be a parasite, as its size and movements resembled the ameba nana, but decided it probably was due to the mercury inunctions. However, in watching these cells under the microscope we noticed that after a certain time they, too, ruptured and gave out into the stream minute bodies in very much the same way as the ameba of the upper intestinal tract had done. So we decided to do some blood culture work on these cases.

The first blood culture taken in bullion, using about 50 cc of bullion and 5 cc of blood, gave us a positive growth in forty-eight hours. The organism found was a large divided coccus. It was not the ordinary diplococcus, but a coffee bean coccus resembling the micrococcus catarrhalis except that it was larger, was Gram positive and usually grouped in tetrads. We also realized it was the same organism we had recovered in the post on the guinea pig, that had been inoculated with blood from an epileptic patient.

The possibility that this might be a contamination led us to take every precaution in making further blood cultures. Using very careful asepsis, we made new culture media. I then selected six cases for blood cultures, again making a careful selection of cases. No culture was opened for forty-eight hours. At the end of that time two of the cultures were positive, three of the cultures were positive in four days and the last one in five days. Two control cultures taken on normal individuals were negative at the end of one week.

Transfers from the blood cultures onto agar media was made. The growth on one of the slants was a deep golden yellow. On four of them the growth was white, but on second transfer turned to a pale golden yellow. The growth on the sixth slant was white and remained so on further transfer.

The organism on all cultures, however, was identical in morphology, staining properties, etc.

This organism was not definitely identified at the time. The very short part of the day we had to devote to this work did not permit of any extensive research. Other duties at the Infirmary occupied most of our time. Our guess was that the organism was a sarsina.

Autogenous vaccines were made from each growth. Before the vaccines were finished one of these patients, a young negro lad, developed a status epilepticus. Previous to this time this patient was having a convulsion about once in ten days. His blood culture was one of the two we had to incubate four days before a positive culture was obtained. The convulsions began during the night. The following morning another blood culture was made. This was opened after eighteen hours incubation, and a very heavy growth of this same organism was found. Phagocytosis was very marked in this culture. A smear showed from three to eight cells in a microscopic field completely filled with bacteria. The patient died that night, about twenty-four hours after the beginning of the status epilepticus. I tried to obtain a post on this case, but was unable to do so.

I began giving the vaccines subcutaneously and in very small doses, increasing the dose daily. I was treating three patients. After three injections no one had shown any reaction to the vaccine, although two had no convulsions during those three days. The third one had a slight seizure the second day.

I now began intravenous injections of vaccine. After the first injection one of the patients had a chill lasting twenty minutes. The other two showed no reaction. I continued intravenous injections and the third day this same patient had a second chill, although not quite so severe as the first one.

Our next set of three vaccines was now ready. We considered the vaccine ready for use when the control culture, taken from the vaccine had been sterilized and bottled, was negative after forty-eight hours incubation.

I began treatment on the next three cases by giving the initial dose of vaccine intravenously. Two of the patients had no reaction. The third

patient had two spells that afternoon, two during the night and two the next morning. These were more severe than this patient had been having, so we immediately looked up our control cultures on his vaccine and found them to have a slight growth after three days' incubation, although this culture had shown no growth at the end of forty-eight hours. We realized then that we had not taken into consideration the fact that this organism was slow in growing at certain times. Needless to say that we gave plenty of time and incubation on our control cultures after this, before using the vaccine. I immediately put this patient to bed and administered a sterile solution of mercurochrome, 20 cc of a 2% solution intravenously. His convulsions stopped.

We resterilized this vaccine, using a higher temperature and over a longer period of time. When we were sure this vaccine was sterile I again gave it to this patient intravenously in gradually increased doses. The patient had no convulsions during this time, was improving daily and showed no further ill effects of the first dose. At the present time this man is still in very good condition and is working every day.

While we regretted the oversight in the length of time of incubation of the control cultures, no bad results followed, and I was greatly interested in the fact that a small dose of vaccine containing a very few active organisms could so rapidly increase the epileptic seizures. I hope to do some experimenting along this line at some future time.

I gave these vaccines over a period of about two weeks. After the second dose not one of the six patients I was treating had a convulsion; all of these patients had as many as three to five spells every two weeks before using vaccine, and now they said they felt fine and they were very enthusiastic about the vaccine treatment.

I left Oak Forest, as the field was not large enough, as I thought this work would take at least another year and that it would require more careful observation and time than I would be able to give to it in connection with my other duties at Oak Forest, so I left the Infirmary to take up this work in some other place. I did not think that anyone of the six patients treated at Oak Forest had enough of the vaccine treatment to expect any lasting results. As I had left the institution, I was unable personally to observe these patients and as they were general ward cases, no daily records were kept, so I was unable to get a complete history of their progress. However, I had told these patients that should their epileptic seizures return, to give such information to Miss Mulroy in the laboratory. This they did quite regularly, so from this observation and from recent personal interviews with these patients we are able to make the following report:

For two weeks following the treatment all of the patients were free from convulsions. In the next two weeks four of them had a slight seizure. These four continued to have convulsions at very irregular intervals, ranging from one to six weeks. The spells gradually increased from slight seizures to more severe type. However, at the present time none of them is having as frequent or as severe convulsions as he had been having before the treatment was given. Each of these patients had at some time during this period received bromide, luminal or some other medication from the dispensary.

The fifth patient had no convulsions for over two months following treatment. He then had a slight convulsion, and was again free from attacks for nearly three months' time. Since then he has had convulsions at intervals of from one to two months, and the seizures are gradually getting a little more severe. This patient, previous to treatment, had from two to four spells each month.

Patient number six, a rather thin, middle-aged man, had a severe amebic dysentery when he was first referred to me. I had treated him for this prior to giving him the vaccine treatment. He had improved but was not entirely free from dysentery, and was still having epileptic seizures. Following eight days' treatment with vaccine, he was entirely free from convulsions for eight months, his intestinal trouble had disappeared, he was feeling fine and had gained fifteen pounds in weight. From the eighth to the tenth month, he said, he occasionally awoke during the night and found himself partly out of bed. This he thought was due to a slight convulsion. Very recently he had a slight seizure during the day, which was his first and only convulsion during the day since receiving the vaccine ten months previous. Whether or not he had had night attacks we can only guess. Neither patient number five or six had received any medication whatever since the vaccine treatment, except an occasional cathartic.

Before entering the Kankakee State Hospital

I treated a private patient in Chicago who was having as many as six spells a day. I used a stock vaccine made from the same organism, no mercury was given. The treatment was as follows:

1 cc equals about 500,000,000 bacteria.

January 16, 1927—1 cc intravenously, a short spell.

January 17, 1927—2 cc intravenously, no spell.

January 18, 1927—3 cc intravenously, a short spell.

January 19, 1927—4 cc intravenously, no spell.

January 20, 1927—5 cc intravenously, no spell.

January 21, 1927—6 cc intravenously, a spell.

January 22, 1927—7 cc intravenously, a slight chill, changed to autogenous vaccine.

January 23, 1927—8 cc intravenously, no spell.

January 26, 1927—10 cc intravenously, no spell.

January 29, 1927—10 cc intravenously, says he feels wonderful.

February 1, 1927—5 cc intravenously, two spells.

February 3, 1927—15 cc intravenously, chill and three short spells.

February 4, 1927—6 cc intravenously, two short spells.

From February 4 to February 13 spells returned, as many as three per day always occurring at night.

February 13, 1927—5 cc intravenously, one spell.

February 14, 1927—5 cc intravenously, no spell.

February 15, 1927—5 cc intravenously, no spell.

February 16, 1927—5 cc intravenously, no spell.

February 17, 1927—5 cc intravenously, no spell.

February 18, 1927—3 cc intravenously, four spells that night.

February 19, 1927—15 cc intravenously, no spell.

February 21, 1927—15 cc intravenously, no spell.

February 23, 1927—15 cc intravenously, no spell.

February 26, 1927—15 cc intravenously, feels wonderful.

When I came back March 1, 1927, he told me he had four spells last night. I gave him twenty cc intravenously and returned the next day for another injection, and his mother said he had gone out looking for a job. At that time I entered the Kankakee State Hospital. Later I tried to get in touch with his patient but found that the family had moved, leaving no address, so I lost track of the case.

I called upon Dr. A. S. Hershfield, State Alienist, explaining the work I had done on epileptic patients, also expressing my desire to continue this work. He referred me to Dr. W. A. Stoker, Managing Officer of the Kankakee State Hospital. Dr. Stoker gave me permission to continue my work along this line in connection with the duties of staff doctor at the institution.

With the kind advice of Dr. Dyer, head physician, I sent circular letters to the guardians of the epileptic patients, securing their permission to carry on this experiment work.

I hope to give a detailed account of my work at the State Hospital after sufficient time has elapsed to give me the information I want regarding the permanency of this treatment. However, I want to make a few preliminary remarks about the work I have done there at this time.

I made approximately 25 blood cultures on epileptic patients at the State Hospital and found all cultures positive to the same organism that I had found in the blood cultures on epileptic cases at Oak Forest; and again found the same variation in the length of time it took to grow the organism.

During the period from March to November, 1927, three patients developed a status epilepticus. These patients were not the cases I had under treatment, so no autogenous vaccine was available. However, I was able to stop the convulsions in all three cases by injecting intravenously large doses of a stock vaccine of this same organism.

Case 1. Convulsions started in the night and were continuous for eight hours. I gave 6 cc. of a very heavy vaccine intravenously. She had two further convulsions during the night. I gave a second large dose the next morning. There were no further convulsions and the patient returned to her duties on the ward that day. Six cc. equals about 6 billion bacteria. This same patient developed a second status epilepticus two months later. These spells were short but very frequent; she has as many as twenty-four in one hour.

I gave 10 cc. of the heavy vaccines. There were no further spells.

Case 2. Male, after continuous convulsions for eight hours 10 cc. of the heavy stock vaccine were given. He had no further spells and felt fine.

Case 3. Convulsions began during the night and continued for twelve hours. I gave 10 cc. of the stock vaccine. The patient had two slight seizures after that. No further vaccine was given, and she was returned to her ward.

I have used the stock vaccine successfully on milder cases of epilepsy at the State Institution.

The positive identification of this organism has been undertaken by Dr. B. Feuer, Instructor of Bacteriology at the Northwestern Medical School. This work is not yet complete, but a preliminary report of the findings submitted by Dr. Feuer is as follows:

CULTURAL REACTIONS

	No. 1*	No. 2*	No. 3*	No. 4†	No. 5‡	Sarcina Lutea	Micrococcus tetragenus
Gelatine	Liquefied	Peptonize	Liquefied	Neg.	Liquefied	Liquefied	Neg.
Milk	Neg.	Liquefied	Peptonize	Slight-ac.	Slight-ac.	Neg.	Slight-ac.
Dextrose	Neg.	Neg.	Neg.	Pos.	Pos.	Neg.	Pos.
Lactose	Neg.	Neg.	Neg.	Pos.	Pos.	Neg.	Pos.
Sucrose	Neg.	Neutral	Neg.	Pos.	Pos.	Neg.	Pos.
Mannite	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.
Pigment	Lemon Yellow	Lemon Yellow	Lemon Yellow	White	White	Lemon Yellow	White
Motility	None	None	None	None	None	None	None
Spores	None	None	None	None	None	None	None
Gram Stain	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.

*Nos. 1, 2, 3—Transfers from original slants three months old.

†No. 4—Original slant 10 days old.

‡No. 5—Original slant few days old.

CONCLUSIONS

That all epileptic patients examined gave a history of intestinal disturbances.

That intestinal parasites, especially the entameba histolytica, were positive in 100 per cent. of the cases examined.

That after two or three injections of Neu-salvarsan, either intravenously or intra-duodenally, the parasites disappear from the feces but are still present in large numbers in the upper intestinal tract.

That the continued use of mercury inunctions over a long period of time will rid the upper intestinal and biliary tracts of this parasite.

That the blood cultures of epileptic patients were positive to a large Gram positive organism, the micrococcus tetragenus in 100 per cent. of cases examined.

That the injections of autogenous vaccine made from this organism, relieved the patient of epileptic seizures for a certain length of time.

That a stock vaccine made from this organism relieved the convulsions of status-epilepticus in three cases, which was 100 per cent. of the cases treated.

That all cases treated improved and that further study is indicated to determine whether this improvement is permanent or transitory.

THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS*

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CHICAGO

The primary object of the surgical treatment of pulmonary tuberculosis is pulmonary collapse. The principles on which such treatment is based are rest of the diseased lung, fibrosis, collapse of tuberculous cavitations, arrest of hemorrhage, and indirectly promoting healing of tuberculous lesions elsewhere by arresting the progress of the primary lesion.

Rest is the most important essential in the treatment of tuberculosis. Confining the patient to bed lessens respiratory activity but does not put the diseased lung at rest. Its volume fluctuates with each respiratory excursion and the flow of toxin and bacilli laden lymph into the blood stream is accelerated by this pump like action. Cough further accelerates this flow and tends to disseminate the infection through the bronchial tree. Pulmonary collapse puts the lung at rest and reduces to a minimum toxic absorption and spread of the disease.

Tuberculosis lesions heal by fibrous tissue encapsulation and contraction.

Extensive fibrous tissue shrinkage of the lung

*From the Surgical Department, College of Medicine, University of Illinois.

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is limited by the rigidity of the chest wall and mediastinum. The effort at such shrinkage is evidenced by sunken supra and infra-clavicular fossae, by the approximation and increased obliquity of the ribs and by the shifting of heart, trachea, and great vessels towards the effected side. In extreme cases of right sided fibrosis a complete extrocardia results. Mobilizing the chest wall and relaxing the diaphragm makes possible a maximum shrinkage of the lung without displacement of the mediastinum. The collapsed condition of the lung stimulates an increased fibrous tissue formation which further encapsulates the lesions, limits their spread, and furnishes the best safeguard against reactivation.

Tuberculous cavitations of considerable size cannot heal because their walls cannot approximate. Such cavitations usually become secondarily infected and the consequent chronic suppuration increases cough and sputum and may play the major role in determining an unfavorable course.

Pulmonary collapse facilitates the drainage and healing of such tuberculous cavitations.

Pulmonary hemorrhage whether of the small recurrent or profuse type is a serious complication in that it reduces the patient's defense reaction against the disease even though the loss of blood in itself may not be sufficient to threaten the patient's life. Pulmonary collapse or compression is the ultimate recourse in such cases.

Healing of secondary tuberculous lesions following the eradication of the primary focus such as orchidectomy, nephrectomy, or excision of a tuberculous joint, is frequently observed. Similar healing of secondary foci may also be obtained following the arrest of a primary pulmonary tuberculous lesion.

The obliteration of chronic empyema complicating pneumothorax collapse whether or not there is secondary pyogenic infection can usually be achieved only by thoracoplasty collapse of the chest wall.

Methods of Pulmonary Collapse. The methods of pulmonary collapse are artificial pneumothorax, paralysis of the diaphragm, extra-pleural thoracoplasty and pneumolysis. Artificial pneumothorax in the absence of adhesions results in the maximum amount of pulmonary collapse. Thoracoplasty under favorable conditions approximates pneumothorax in the extent of collapse achieved. Paralysis of the diaphragm results in a reduction of the pleural cavity of about one-fourth. Pneumolysis brings about a compression of the lung in proportion to the extent of lung surface separated from the chest wall and to the mass of the interposed compressing substance—muscle, fatty tissue, gauze.

Indications. The indications for pulmonary collapse generally speaking is limited to patients who do not make satisfactory progress following modern sanitarium treatment or its equivalent. The indications for the different methods of collapse enumerated vary considerably. Artificial pneumothorax is usually considered as part of the non-surgical treatment, and its discussion therefor lies outside the limits set for this paper. It may be in order, however, to state that pneumothorax is usually the treatment of choice. It is a simple, relatively safe procedure, results in the most complete collapse of the lung and offers a fair prospect of restoration of function after the lesion has healed. Its greatest limitation is pleural adhesions. Other disadvantages are frequency of complicating pleural effusion which occurs in about half the cases and which not infrequently becomes purulent, necessitating thoracoplasty and in some cases further plastic operation to obliterate the empyema cavity. The pneumothorax refills must be continued for years and there is uncertainty as to when it is safe to allow the lung to re-expand. If too early the lesion may again become active. If the lung is kept collapsed for several years the fibrosis may have become too extensive to permit re-expansion. This is the more likely, the more extensive the lesion before the collapse. Many patients abandon treatment before the time limit set. For economic reasons also it may be desirable to elect thoracoplasty which is completed in a few weeks rather than pneumothorax collapse that must be kept up for years.

Paralysis of the diaphragm may be effected by crushing or cutting the phrenic nerve just above the clavicle or by extracting the intra-thoracic portion—phrenicoexeresis. The latter is a relatively simple and safe operation. The advantage of extracting the nerve lies in the fact that in a considerable proportion of cases some of the fibers of the nerve enter the main trunk below the level of the clavicle and these fibers will maintain a partial enervation of the diaphragm after the nerve is cut at a higher level. A com-

plete collapse may be achieved also by isolating and cutting the trunk fibers that make up the nerve.

The chief indications for phrenico-exeresis are as a test operation to determine whether or not a thoracoplasty may be safely done and as a supplementary operation to thoracoplasty. There is a rational indication for it also supplementary to artificial pneumothorax to reduce the pleural cavity to a re-expanded partly shrunken lung. It is also said that the interval between refills may be lengthened following its use and that it reduces the tendency to pleural effusion. There may also be an indication for it in case of patients in whom adhesions prevent pneumothorax collapse and who are in too poor condition for extrapleural thoracoplasty.

The fundamental indications for extrapleural thoracoplasty is a chronic, unilateral, fibrous pulmonary tuberculosis in contra-indication to a caseating process.

Chronicity is indicative of natural resistance and this natural resistance is evidenced clinically by a fairly good general condition of the patient and by physical signs of pulmonary shrinkage as mentioned above. Chronicity with persistence of symptoms also implies that although fibrosis has sufficed to hold the disease in check it has not been sufficient to bring about a cure.

Unilateral involvement is an essential requirement inasmuch as after thoracoplasty the other lung must perform the entire respiratory function. Strictly speaking, however, chronic unilateral involvement probably never occurs. What is meant is that the disease in the opposite good lung is not demonstrable clinically or if it is that it is of limited extent and not progressive. The question as to whether a lesion is progressive or not may be impossible to determine except by some months observation.

The third stipulation, that of pleural adhesions preventing pneumothorax collapse is on the assumption that pneumothorax as stated above is the treatment of choice.

Other considerations which affect prognosis are age, side, and location of the lesion for which collapse is done, location of the lesion on the opposite side, presence of tuberculosis elsewhere in the body and other non-tuberculous disease. Thoracoplasty in children has yielded relatively less satisfactory results than in adults. The most favorable age period is between twenty and forty-five, but patients past fifty have been operated upon with good results. Thoracoplasty on the left side, presumably because of the presence of the heart, results in better compression of the left lung. Lesions at the apex have responded better than those at the hilum or base. Experience indicates that lesions at the hilum or base on the opposite side are more likely to progress following the operation, but favorable results have been reported in such cases. Laryngeal tuberculosis, unless of severe ulcerative type, has been found to improve following operation. Tuberculosis of the kidneys and bones and joints is considered as contraindication by some, while others have reported good results following operation in such cases.

Of non-tuberculous diseases those of the opposite lung and of the heart are the most important. Asthma, chronic bronchitis, bronchiectasis, and extensive fibrosis are generally considered as contraindications. The vital capacity determination is of real value in estimating the severity of the damage caused by these disease conditions. Cardiac lesions furnish a relative contraindication according to the nature and severity of the process, but cardiac symptoms due to displacement of the heart, particularly to the right, are relieved by operation.

Contraindications to thoracoplasty are rapidly progressive caseating lesions, extensive fibrosis in the opposite lung sufficient to greatly reduce its respiratory capacity, active or extensive extrapulmonary tuberculosis and all other conditions contraindicating any major surgical procedure.

There remains a group of border line cases in which there exists a relative indication for a several stage thoracoplasty. Such are patients with evidence of a mixed fibrous and caseating lesion, those with moderately extensive healed, or a localized quiescent lesion in the opposite lung, those with non-thoracic tuberculosis of mild grade or non-tuberculosis organic disease.

The clinical recognition of the predominating pathological type present, while of the greatest importance, may be difficult and uncertain. The collaboration of the surgeon with a skilled internist who has made a special study of pulmonary tuberculosis and particularly one who has followed the progress of the individual patient is essential to the selection of cases for operation.

The indications for operation may be extended

to a large proportion of these patients by doing a multiple stage operation, doing only as much at each sitting as the patient will safely stand. Some of the most gratifying results in my experience have been in case of patients on whom a six or more stage operation is necessary.

Operative Technique. The technique of phrenico-exeresis is quite simple. An incision four—six centimeters long is made just above and parallel to the clavicle, the mid-point of the incision being over the lateral border of the sterno-mastoid muscle. The fascia overlying the scalenus muscle is separated and the nerve exposed as it crosses the scalenus obliquely from above downward and inward. The nerve is grasped with a hemostat, cut and the distal portion slowly extracted by twisting the hemostat. Usually a little gas anesthesia is required only during the few moments necessary for extracting the nerve.

The technique of extrapleural thoracoplasty has been quite well standardized with respect to the number and length of ribs to be resected. All the ribs except the twelfth are resected flush with the transverse processes of the vertebrae. About an 8 cm. segment is removed from the eleventh, from 8 to 15 cm. segments of those above up to about the fifth, and somewhat shorter segments of each of the fourth, third, and second, and from 2½ to 5 cm. of the first. It is generally agreed that it is necessary to include the first rib in all cases in which the lesion is at the apex, and since the more complete collapse the better, it seems advisable always to respect it. Most of the narrowing of the thorax is due to a longitudinal drop of the whole chest wall to such an extent that the distal stump of the first rib comes to lie opposite the second or third proximal stump. If the first rib is intact, it prevents such a marked drop. The resection of the first rib is not very difficult technically, but it is essential to separate the periosteum from the upper and anterior edge of the rib well beyond the line chosen for the resection. Carrying the resection too far forward involves the risk of injuring the subclavian vessels.

Extrapleural thoracoplasty should be performed in two or more stages, depending on the general condition of the patient and the extent that it is proposed to resect. The operation was at first performed in one stage and then in two stages when it was found that many patients could not withstand the one stage operation. The present tendency is to standardize the two stage operation. This, in my opinion, is wrong in principle. The indications as to stages should be individualized. If a two stage operation is safer than a one stage, then a three stage should be, and in my opinion is, even more safe. By dividing the operation into several stages, the indication may be extended to patients that otherwise would be too poor risks, and the hazards from operation can thereby be reduced to a minimum.

One disadvantage of the several stage subperiosteal resection, done at from one to two weeks interval, is that sufficient time is thereby allowed for callus formation in the ribs first resected. The resulting stiffening of the lower portion of the chest wall may then prevent the maximum drop, and the eventual collapse is not as complete as following a two stage operation. This callus formation may be much retarded by cauterizing the periosteum with a chemical cautery at each of the first stages or by resection a portion of all of the periosteum with the ribs, as I have done in several cases. If the collapse is insufficient from callus formation or stiffening of the ribs and chest wall from empyema, a resection of the remaining segments of the ribs will complete it. This secondary resection of the remaining segments may be performed through a midaxillary straight incision without cutting any muscles except longitudinal incisions into the serratus major. The remaining segment of the first rib can be removed without much difficulty by this approach. The one essential precaution is to keep inside the periosteal sheath in liberating it.

One consideration which has been a large factor in the choice of one, two, or several stage operation has been the preference as to anesthesia. On the continent many surgeons, notably Sauerbruch, use ether. In using a general anesthetic and especially ether, there is a strong tendency to do as much as the limits of safety will allow after the patient is asleep. The desirability of shortening the period of anesthesia as much as possible also puts a high premium on speed in the performance of the operation. A master of technic can perhaps perform the operation as well in a minimum of time as if he took more time to it, but it seems reasonable to believe that most surgeons cannot. If the operation is per-

formed under a combination of local and ethylene or local and nitrous oxide and oxygen anesthesia, there is no special need for hastening the conclusion of the operation. It can be performed safely with as much attention to details as can any other operation under similar anesthesia. If the regional anesthesia is efficient, the gas anesthesia may be reduced to the anoci-association stage to relieve the patient of the psychic stress of the ordeal. If to this combination is added an alcohol injection of the nerve trunks, or if the nerve is crushed with a hemostat, there is very little, if any, postoperative pain. Under such conditions no patient in my experience has objected to a several stage operation. The long continued anesthesia brought about at the time of the posterior resection makes possible later resection of the remaining segments, where necessary, with the aid of a little gas anesthesia only. In one patient with symptoms of an active tuberculosis and an empyema with complete lung collapse the patient's resistance was so poor that only a very little could be done at each sitting. A complete collapse was achieved in twelve sittings. The patient has been well during the four years since operation and is back at work.

Results. The most convincing evidence of the value of thoracoplasty in the treatment of pulmonary tuberculosis is the result. In a series of 1,159 cases of advanced lesions, collected from the literature by Alexander, 36.8 per cent. were cured, 24.4 per cent. were improved and 5 per cent. were unimproved or became worse. The immediate operative mortality was approximately 1.5 per cent. and the additional mortality during the first six weeks from causes indirectly connected with operation was 12 per cent. The deaths in the remaining 19 per cent. had no connection with the operation, and most of them were due to the progression of the tuberculous disease in the opposite lung or other organs. Twelve to twenty-four per cent. of Sauerbruch's cases died from bilateral tuberculosis in spite of the operation. The importance to prognosis of distinguishing between the chronic fibrous proliferative and the rapidly progressing predominatingly exudative caseating type is indicated by the fact that in a group of thirty-five cases of those reported from his clinic, the combined early and later mortality was only 6 per cent., 17 per cent. were unchanged or worse, 34 per cent. rendered free from bacilli, and 40 per cent. cured, while in the caseating type the combined mortality was 49 per cent., 18 per cent. were unimproved or worse, 15 per cent. were better, and 13 per cent. bacilli-free.

During the past two and a half years I have performed a phrenico-exeresis on 11 patients, a thoracoplasty in 21 patients,(phrenico-exeresis and thoracoplasty in 6, and extrapleural thoracoplasty and pneumolysis in one. The patients on whom phrenico-exeresis alone was performed were all cases with evident bilateral involvement and were all unfavorable cases for thoracoplasty. Three were very definitely improved as evidenced by marked decrease in cough and sputum and gain in weight. Four were temporarily benefited. One died a few days after operation with symptoms of respiratory failure. This patient had marked dyspnea on slight exertion and her vital capacity was only about 25 per cent. of the normal. Her pulmonary lesion was of the diffuse fibrous type but bilateral. Three have died at varying periods following the operation from the progress of the disease.

Of the twenty-two patients on whom thoracoplasty alone was performed 9 may be said to be symptomatically cured during the period of observation since operation, 10 were greatly improved, but 2 of these have had a mild relapse of symptoms; two died, one of streptococcus infection of a pleural exudate and the other following the rupture of a sterile pleural effusion into a bronchus. Of the patients on whom thoracoplasty and phrenico-exeresis was performed all have shown great improvement during the period of observation.

Pneumolysis and thoracoplasty was performed in one case for persistent hemoptysis following a partial thoracoplasty performed elsewhere. The thoracoplasty was completed and a latissimus dorsi muscle flap was interposed between the lung and the chest wall. There has been no frank hemoptysis since but the sputum is occasionally blood streaked. The tuberculous process is arrested.

SUMMARY

1. Pulmonary collapse is of great value in the treatment of pulmonary tuberculosis because it promotes healing of the lesion, diminishes toxic absorption, and lessens the tendency of the disease to spread.

2. Healing results from fibrous tissue encapsulation of the lesion. The relaxation of the lung makes possible the maximum fibrous contraction and by rest of the lung and by venous and lymphatic stasis stimulates fibrous tissue formation.

3. Toxic absorption is lessened owing to the slowing of the lymph and blood stream and the collapse of cavitations.

4. The spread of the disease through the blood and lymph stream is similary retarded and the lessened cough and sputum decrease the tendency to the dissemination of the infection through the bronchial tract.

5. Extrapleural thoracoplasty is the only practical means of obtaining complete collapse of the lung in cases in which pleural adhesions make pneumothorax collapse impossible. The operation consists of the resection of segments of the proximal portions of the upper eleven ribs.

6. The indications for extrapleural thoracoplasty are limited to cases in which the condition of the other lung is satisfactory, that do not show definite progress towards recovery following adequate sanitarium treatment or its equivalent, and in which adequate pneumothorax collapse is impossible owing to adhesions.

7. The ideal condition with respect to the opposite lung is one in which there is no evidence of disease of any kind, but a healed focus or an inactive one with or without cavitation, does not contraindicate operation. A definitely active, progressive tuberculous process or well marked non-tuberculous disease in the better lung contraindicates operation.

8. An associated tuberculous empyema with large cavity, whether primary or secondary to pneumothorax collapse, is an indication for operation. Tuberculosis elsewhere in the body and other constitutional disease may or may not contraindicate operation, depending on the severity of the lesion and the general condition of the patient.

9. By dividing the thoracoplasty into more than two stages the indication for it may be extended to patients who would be poor risks for a one or two stage operation.

10. A study of results following thoracoplasty in a large series of collected cases shows that over 60 per cent. were clinically speaking cured or greatly improved, and the total mortality during the first six weeks following operation was 13.5 per cent.

11. The author reports recent results in a series of 29 cases following thoracoplasty and in 11 cases following phrenico-exeresis.

TRACHOMA: A REVIEW OF THE LITERATURE

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When one considers the economical loss from trachoma and its consequences, it would seem that it is high time that this dreaded disease be given state and national attention, for by the simplest calculation based on previous reports of the prevalence of trachoma, in the state of Illinois alone the loss of earning power, computed on the basis of $5.00 a day, amounts to nearly one-half million dollars annually.

From the foregoing facts is it not reasonable then to bring to the attention of our state public health authorities the necessity of establishing a special committee whose function would be to secure definite data as to the incidence and systemized control of trachoma?

Although the literature on public health subjects in general is profuse, one can search quite a bit before finding the subject of trachoma discussed at any length. In reviewing the papers of foreign ophthalmologists it is interesting to note the efforts they are expending to bring their governments to a realization of the importance of trachoma control.

Trachoma, like acute blennorrhea, is an infection of the conjunctiva which originates by infection and produces an infectious secretion. It is distinguished from acute blennorrhea principally by its chronic course, and by the development of a hypertrophy of the conjunctiva which is a most characteristic feature of trachoma. From the roughness of the conjunctiva, caused by this hypertrophy, the disease gets its name.

The disease almost always affects both eyes. Cases occur in which the disease, even after it has lasted for years remains confined to one eye. Infection takes place by the transfer of the secretion.

Etiological Studies. Trachoma is an infec-

tious disease. Most authors agree as to the direct contact method of infection through the secretions of those afflicted. A few opinions are gathered from authors scattered in various parts of the world. The White Brothers[1] with an extensive experience regard trachoma as a symbiotic infection, and its different varieties and degrees produced by different strains of the virus.

Martinez Nevot[2] discusses 250 cases observed in the Malaga region. He is of the opinion that trachoma is largely due to deficient hygiene, which in its various aspects promotes the development of adenoid tissue, creating a direct predisposition.

Contrary to the general rule, Mellet[3] does not regard trachoma as contagious in adults. He considers it as a chronic conjunctivitis, following one or two attacks not properly or sufficiently treated. He thinks that trachoma can develop only in individuals in whom adenoid involution has not yet taken place; that it is a palpebral adenoiditis, at first acute, then chronic with acute exacerbations.

Nicolle[4] believes that there are various forms of trachoma virus. One form is adapted to the human conjunctiva where it has developed a special seriousness. For this form, the name of trachoma should be reserved. This virus has the property, when inoculated in susceptible animals, of producing lesions of the human type with special evolution and localization.

Howard[5] believes that cell phagocytosis and the digestion of parasitic bacteria occur regularly as the last defensive process in the fight of the epithelial cells against the excitors of purulent inflammation of the conjunctiva. To Metschnikoff's classification of phagocytes, which is limited to a highly differentiated group of cells of mesodermal origin, must now be added cells of exodermal origin, viz: the epithelial cells of the conjunctiva which is one of the mucous membranes of the body.

In the light of our new knowledge of the proof of epithelial cell phagocytosis, our conception of the epithelial cell inclusion bodies in such disease as trachoma is greatly simplified. Intracellular proliferation of microorganisms, according to Howard, is not a process or a phenomenon unique for inclusion bodies alone. It also occurs in the realm of known bacteria, e. g., the bacillus murisepticus is phagocytosed by the endothelial cells (mesodermal phagocytes) of blood vessels in mice, and proliferates within the substance of these cells.

The initial bodies of trachoma, which are stained blue by Giemsa's or Lindner's contrast method, should be considered as the active virus of these diseases. Whether the initial bodies are bacteria or protozoa is a problem which must be settled by bacteriologists. It is Howard's opinion that there are two types of trachoma, the ocular or insidiously beginning chronic trachoma, and genital trachoma, which as regards origin includes inclusion blennorrhea of the newborn and acute trachoma in adults.

Lately Noguchi[42] has given us some very important findings as to a possible micro-organism, which in five cases produced such strikingly similar lesions as are found in human trachoma that the conjunctivae of the experimental animals were pronounced by most competent authorities to be trachomatous.

Direct inoculations from the conjunctivae of Indians suffering from trachoma proved unsuccessful, but when special culture media was used and materials from these applied, the animals developed a granular conjunctivitis in from two to four weeks, which in from two to five months showed the conjunctivae to be strikingly like that in human trachoma.

However, Noguchi thinks the trachoma of these Indian patients from whom materials were collected to use on the monkeys, differs from other types and he states, that in spite of the fact that he had as many as three series of transmissions of the disease, it remains to be determined whether or not the parasite is related to forms of trachoma other than that occurring in American Indians. This must be determined by isolation of the micro-organisms from cases in other localities, and possibly also by serological examinations.

Incidence of the Disease. In August, 1926, the writer interviewed the head of the Illinois Department of Public Health on the matter of trachoma in southern Illinois, and was told that the department did not think trachoma could be considered a menace in the state. The official quoted the results of a survey made by the department in some of the schools in several southern counties of the state. There was a disagreement by a member of the U. S. Public Health service as to the number of cases pronounced

trachoma by a former member of one of our state charitable institutions. The department then came to the conclusion that there was but little trachoma in the state of Illinois.

Our immigration laws and hygienic and sanitary schools have removed epidemic trachoma, but in certain districts in America and Europe there exists persistent foci of the disease. As late as August 1924, according to Fox[6], there were 350 cases among 3500 Blackfoot Indians on the reservation adjacent to Glacier Park, emphasizing a greater need of interest in these governmental wards.

The findings of W. Wibaut and W. H. Smith[7], in Amsterdam, Holland, is one of interest. In the period of 1914-1917 a survey of trachomatous subjects was carried out by a commission appointed for this purpose. Statistics were gathered from schools and families and clinics. It was found that the majority of the cases occurred between the ages of 1 and 6 years, i. e. in children of pre-school age. Hence, the source of infection chiefly in the family, the school playing only a secondary role. An astonishing finding was that most of the children found trachomatous had no other functional troubles, and had never received any treatment.

E. Blessig and O. Kurkis[8] of Berlin report that from 1805 to 1922, the statistics disclose a decrease in the percentage of trachoma patients at the Dorpat clinic from 61.1% in 1805--42 to 9.86% in 1920-22. Trachoma still holds first rank however, as a cause of blindness in Esthonia.

Harvey J. Howard[5] of Shanghai is of the opinion that although there are no adequate statistics concerning the incidence of trachoma among school children in China, the author's observation and information have convinced him that trachoma is rampant throughout the country. It affects directly almost every family in every class of society, but chiefly where uncleanliness and ignorance is concerned. A very conservative estimate indicates that 30% of the population is affected. This means 12,000,000 Chinese have trachoma, 2,000,000 being blind in both eyes, and 5,000,000 in one eye.

In African orphan asylums the incidence of the disease sometimes runs as high as 50%. In Egypt in 1920 it was 96%, and in 3 years was cut down to 85%. It was diminished in the government schools of Cairo to 35% in 1900. Pre-war statistics show that 3,000,000 persons in Russia are affected, the disease being most widespread in the Volga Basin.

The Diagnosis of Trachoma. There are several conditions resembling trachoma particularly in the formation of the granulations. Chief among these is follicular catarrh. The two diseases are very similar in that lymph follicles occur as a characteristic formation in both. In follicular catarrh they are smaller, are more sharply limited, and project farther above the surface of the conjunctiva. In trachoma, they are larger, destitute of sharp outlines, and less prominent.

The follicles proper are often cylindrical and arranged side by side in a row like a string of pearls, while trachomatous granulations are round and more rarely present such arrangement. But these characteristics are sometimes so obscured that even experts cannot, in many cases, make the diagnosis with certainty, and the subsequent course of the disease alone affords the desired information. Even in the histological structure no distinction can be found between follicles and trachomatous granulations. These two diseases have repeatedly been confounded with each other and some authors, in fact, explain follicular catarrh as being a form of trachoma distinguished by its mildness and freedom of danger.

It is not yet certain whether follicular catarrh is spread by contagion, like trachoma, or is merely the result of the contamination of the air and dust. On the other hand, it is quite satisfactorily established that, under certain circumstances, follicular catarrh may arise without any contagion whatever. This is the case with the catarrh produced by atropine, in which the irritation is chemical.

A more important point of distinction betwen both diseases is their clinical course. Follicular catarrh is not associated to any considerable degree, with papillary hypertrophy of the conjunctiva, with pannus, or with any of the other sequelae. It is a disease free of serious sequelae and even without any treatment finally disappears and leaves no trace behind. From the standpoint of prognosis alone, the differentiation of the two diseases is not only theoretically, but also practically, of great importance.

If a physician is doubtful whether he is dealing with trachoma or a follicular catarrh, a dis-

tinction which often cannot be made in the first examination, especially in early cases, he must classify the case as one of suspected trachoma, take the necessary steps to avoid the spread of the disease, and institute treatment at once. If these measures lead to rapid decline of the inflammation and diminution in size of the granulations in a few days, the case is one of follicular catarrh, since trachoma is much more obstinate.

We must regard the formation of granulations as a non-specific reaction which the conjunctiva, like other mucous membranes, exhibits toward many different sorts of irritants. Such formation of granulations occurs in its most pronounced form in trachoma and follicular catarrh.

According to Stuckey[9], pannus is pathognomonic of trachoma in China. The cicatrices of old trachoma appears as narrow striae in the red and thickened tarsal conjunctiva of the upper lid. They run chiefly more or less parallel to the lid margin. Cases which clear up readily with astringents are not trachoma. There are few conditions besides follicular conjunctivities which are likely to be mistaken for trachoma. Calcareous spots are whiter than trachoma and often irregular in shape. Careful examination easily differentiates chalazion.

Several experimenters have attempted to associate certain serologic reactions in connection with trachoma.

Salvatore Sgross[10] believes that the disease being so prolonged and alterations so profound that it must provoke the formation of specific anti-bodies in the blood. He studied 47 patients with various stages of trachoma, also using controls with and without ocular ditsurbances. In a first series of tests antigen was prepared by macerating with alcohol fresh granulations taken from conjunctivae. In a second series an aqueous extract was used, the trachoma material being suspended in a 5% phenolized physiologic solution at a dilution of 1:10,000. A third series of tests was carried out on control alone.

As a result the author concluded that there are special substances in the blood of trachomatous persons which are able to prevent hemolysis in the presence of antigen obtained from material removed from the conjunctiva of trachomatous subjects. This reaction is more evident in cases of chronic trachoma, especially when corneal lesions are present. It was negative in fresh cases, those in which the infection was less than 15 days old.

L. Maucione[11] made observations on the von Pirquet cutaneous reaction in relation to trachoma and vernal conjunctivitis. Experiments were made with the cutaneous reaction in 61 persons affected with trachoma and free from active or healed tuberculous lesions. The subjects represented several forms of disease from the papillary and granular to the lymphoid and sclero-fibroid. Of the whole 9 were affected with acute trachoma, 6 were negative, 3 positive. Eighteen had a subacute trachoma or a recrudescence, and in 5 of these the reaction was negative, in 13 positive. Thirty-one were chronic cases, in 6 of which the reaction was negative. Three were affected with cicatrical trachoma, and in all of these the reaction was positive. It was observed that those with the large granules and the lymphoid or fungous types gave a more strongly positive reaction. In only 3 of the 20 cases of vernal catarrh in the series was the action slightly positive.

We are indebted to Gallemerts[12] for an excellent method of examining trachomatous eyes with the aid of the slit lamp and the Csapksis microscope in combination with vital staining. He employes either .4% methylene blue, .4% nile blue, or .5% methylene azure. Pain is controlled with cocain. Old solutions are more effective than the fresh ones. The progressive infiltration of the stain can be watched under microscope. Too intense coloring may be modified by a 3-4% tannin lotion.

Kenchowski and Kareuls,[14] who made experiments in vitro to learn the behavior of serum of trachomatous and normal subjects in the presence of red corpuscles, were able to demonstrate that the serum of healthy individuals in a dilution of 1:2,000 hemolyzed sheep red cells in 100% of cases, while that of trachomatous patients hemolyzed in a dilution of 1:64. Continuing their studies further, they showed that when the cells were inactivated by heating to 56.6° C. for one-half hour, the normal serum lost all of its hemolytic property, while the trachomatous serum kept it.

Gangi[14] made similar experiments in order that he might have a larger number of cases from which to draw conclusions, at the same time taking into account the stage of the disease.

He studied 85 serums, in which 55 were from subjects in various stages of trachoma and 30 from normal subjects or persons suffering from various diseases of the eye. He found there was *no* appreciable difference in these serums in respect to their hemolytic power. There were occasionally differences between the serum of normal persons and that of persons with eye diseases, but these were inconstant. In cases of florid trachoma there was a greater degree of hemolytic power than in those of healed trachoma.

Linder revolutionized our conception of the modus operandi of conjunctival infections by his theory that the pathogenic bacteria which affect the mucosa of the eye are epithelial parasites. The old method of making smears from the conjunctival secretion is unsatisfactory since the parasites are found primarily in the epithelium and not in the secretion. By Lindner's method the nature of the causative micro-organisms can frequently be determined several days before secretion appears. The instrument used is a platinum spatula with a moderately sharp edge to scrape the epithelial cells (the ordinary platinum loop is unsuitable.) The conjunctiva is anesthetized with a 5% and later with 10% cocain. After removal of the debris its surface is scraped, just enough pressure being exerted to remove the epithelium, but not enough to cause bleeding. The material on the spatula is then smeared on the surface of the cover-glass as thin as possible. For clinical purposes Loeffler's methylene-blue is satisfactory. The bacteria and nuclei of the epithelial cells take a deep blue color and the protoplasm a light blue.

TREATMENT

The variety of treatment advocated in this disease leads us to the conclusion that there is as yet no specific. We see strong claims for medical as well as surgical methods, and lately the various actino-therapeutic modalities have been applied with varying success. We can but enumerate at this time those methods of treatments, which in the hands of our co-workers have yielded fairly constant results.

Donnell's[18] treatment begins with a stiff massage of the inner surface of the eyelids with a 1% solution of silver nitrate, repeated 2 or 3 times a week in gradually increasing strength until the point of toleration is reached.

Soroa[19] in Barcelona advocates tonic and hygienic measures as very important. He uses tonic preparations such as cod-liver oil or preparations of iodin-arsenic or hypophosphites.

The White brothers[20] in Dallas have used many drugs without material success. Silver nitrate was their first choice followed closely by copper sulphate, then bichloride. Dionin and jequirity were efficacious temporarily in pannus, but they feel that neither should be used for any lengthy periods unless the lid condition is improved. They tried subcutaneous milk injections in 86 cases; irritic pains stopped, but the lid or globe symptoms were not affected. Subconjunctival injection of mercury cyanid in 52 cases yielded no apparent results.

The writer, hearing of the establishment of three stations, for the especial purpose of treating trachoma in the mid-southern area, was interested to know what routine treatment if any had been adopted by the government surgeons working under the Public Health Service.

The nearest station was at Rolla, Missouri, and in reply to the inquiry Dr. Mossman[43] medical officer in charge courteously offered his routine treatment.

He says, "The aim should be, to remove the follicles with as little trauma to the underlying tissues as possible, in order to reduce the amount of resultant scar tissue to a minimum." His method is to scarify the surface covered by the follicles by making multiple punctures with the point of a scalpel or by gentle scraping.

In children, general anesthesia is required. In adults 4% cocaine, 4 drops at intervals of one minute or butyn (2%) solution two minutes apart.

The New York Eye and Ear Infirmary special lid clamp is used to hold the lid and after scarification, which should puncture the follicles, but not go deep enough to penetrate the vascular layer of the lid, the surface is rubbed gently but firmly with gauze wrung out of 1-1000 bichloride of mercury, till the lid appears smooth and white. The canthi are carefully reached. Irrigation with warm boric acid follows, and 2 drops of 20% argyrol are then instilled. The irrigation and argyrol are repeated every 3 hours giving 5 treatments per day. Within 24 hours after grattage a white membranous slough appears and persists for about a week. If any rough places remain after the slough disappears

they should be painted with 2-5% silver nitrate or 4% trichloracetic, and the eye must be irrigated.

After argyrol has been used continuously for a week or so, it should be replaced by an astringent solution *not* containing silver, to guard against argyrosis. A prescription containing zinc sulfate grain, j. boric acid 15 grains to one ounce of water is used.

Recently the writer has followed a procedure which in his hands has given good results in most cases, and the end result desired being a clean conjunctiva with least possible scar tissue, he agrees with Dr. Mossman that less trauma and irritation applied the better.

Dry boric acid powdered is placed in a shallow glass dish and about 2 or 3 cc. of oxy-cyanide of mercury solution 1 to 3,000 is poured into the dish which is put in a slanting position so that the boric powder does not directly mix with the cyanide. A glass rod fused smooth and somewhat rounded is first moistened in the oxy-cyanide of mercury solution then rolled in the boric powder which readily adheres. The combination is then gently but firmly massaged over the everted lid and rubbed till dissolved by the lachrymal flow. This is repeated 5 or 6 times on the upper lid and once or twice on the lower. A separate clean glass rod or the reverse end of the first one is used to treat the other eye if affected.

Rarely has it been necessary to use any anesthetic. The patient opens his eyes readily in 5 to 15 minutes and hardly ever complains of pain. This can be kept up for a week giving daily applications with 10 to 20% argyrol to be instilled at home after boric wash, or the 1 to 5,000 up to 1 to 1,000 oxy-cyanide of mercury may be prescribed as a wash followed in a few moments by argyrol. Very resistant cases are given an occasional rub with the blue stone and silver nitrate in 2% solution, but at no time are the stronger astringents used oftener than 4 days apart, the milder boric rubs being the routine. In cases with ulcers, combining atropine with dionin and the boric, oxy-cyanide of Hg rubs, excellent results with quick recovery has been the writer's experience.

Howard[5] at Shanghai, China, has had a very large experience with the disease. He outlines a procedure which proved satisfactory to the out-patients. In adults and older children, the conjunctiva is cocainized. In young children general anesthesia is employed. The eyelids are retroverted so that the retrotarsal folds are fully exposed; the conjunctiva is rubbed vigorously with dry gauze, thus removing most of the loose trachomatous elements and opening most of the follicles and papillae. Any unopened follicles are opened with the point of a cataract knife and emptied by wiping with dry gauze. To reach follicles in the bulbar conjunctiva and semi-lunilar fold and about the caruncle, a small Prince forceps is used. After all the follicles have been expressed, the conjunctiva is wiped with gauze soaked in 1:2000 mercuric bichlorid, 2 or 3 drops instilled, the eyelids closed, and ice compresses then used. The patient is instructed to return the next day, when the lids are opened after a few drops of cocain solution have been instilled, and the eyes irrigated with boric acid solution. The patient returns daily or every other day for conjunctival rubbings with toothpick swabs first dipped in mercuric bichlorid (1:500), then into boric acid powder. Cocain solution is instilled twice prior to each rubbing. A zinc sulphate solution (.25-0.5%) is given to the patient to use at home 3 or 4 times daily.

C. A. Hayes and F. Oldt[21] of Shanghai, China, in the eye department of the Canton Hospital applied the grattage method devised by John McMullen and used in the U. S. Public Health Service in its campaign against trachoma. From the fall of 1921 to November, 1924, 156 patients were treated. Of the successful cases 91% were cured in three weeks. Some of the cases recorded as improved were afterwards found to be cured; most of them had left the hospitals before cure could reasonably be expected. With this treatment there were practically no after effects, the results being much better than cases treated by expression.

Von Gernet[22] of Berlin refers to his own years of experience in trachoma regions. In the thousand of cases he has treated by all methods, including expression and curretage, excision gave the best results, particularly combined excision of the tarsus.

The practical problems involved as studied by Ziegler[23] are to preserve normal tissue by conservative surgery, or, if that fails, to resort to radical surgery. The conservative surgery of trachoma calls for canthotomy and rapid dilation of the duct, combined with galvano-cautery

puncture, Knapp's roller operation and freezing with carbon dioxid show, while galvano-cautery peritomy may be used to relieve pannus. The radical surgery of trachoma requires, in addition, Burow's splitting of the cartilage or Kuhnut-Heisrath's tarsal excision.

May[16] found that milk injections did not cure the disease but ameliorated the acute symptoms and the pain. Stucky[9] regulates the diet and gives large quantities of cod liver oil, believing a deficiency of vitamin exists.

Cases of trachoma were treated by Meerhoff[24] by injection of ½ cc. of their own serum subcutaneously every 3 or 4 days. The results were especially favorable on corneal lesions and pannus which cleared rapidly after the first few injections.

May[16] performed a series of Wassermann tests on a large group of trachoma cases. In 52 cases, 46 were positive but he believes this proves nothing, as in the types of cases studied one would expect a large per cent to be positive. It indicates, however, the need for systemic treatment in the complications of trachoma such as ulcers, iritis, keratitis and pannus. His Wassermann findings would explain in part why Wiener and Alvis were successful to some extent with their intramuscular injections of mercury salicylate in 5 cases reported recently.

In conclusion the writer wishes to thank Major P. Mossman, surgeon in charge U. S. Public Health Service Station, at Rolla, Mo., for his outline of procedure in treating trachoma, and awaits with interest a tabulated report of results.

If we can but stimulate an interest in the trachoma situation in Southern Illinois, no efforts are ill spent, and all practitioners know that of all afflicted residents of Illinois, none are so in need of (often charitable) medical aid as those suffering with trachoma and its sequaelae.

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INJURIES TO THE MESENTERY.*

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It is my purpose to report briefly an interesting and somewhat unusual case in order to have it on record. While injuries to the mesentery are not uncommon yet when one searches the literature for those similar to this one, few are found. The text-books treat the subject briefly and give few illustrative cases.

In general there are two groups of such injuries. In the first there is simply a rent or a fissure of the mesentery which may be single or multiple.

The importance of such injuries is in proportion to the size of the vessels involved in the injury. In fact such injuries are usually only an accompaniment of other intra-abdominal lesions which give rise to the symptoms calling for exploration. Where such fissures give rise to symptoms sufficiently serious to demand opening the abdomen it is because of hemorrhage from a large loop or from a considerable number of small vessels which have been ruptured. The operative treatment consists in ligating the bleeding vessels and in closing the rent with fine catgut sutures. By using a blunt needle both procedures may be done at the same time.

The anatomy of the blood supply of the mesentery is peculiar. It consists of loops of vessels, both arterial and venous, given off from the main mesenteric vessels. These loops are primary and secondary and occasionally tertiary. That is there are one, two and sometimes three series of vascular loops interposed between the main mesenteric vessel and the terminal vessels which directly supply the gut wall.

There is quite a difference in the number and character of the vascular loops in the different parts. While there are a greater number of loops there is also much more fatty tissue interposed in the lower portions.

On account of the arrangement of the vascular loops great care must be used in ligating and suturing not to cut off too much blood supply from the intestinal wall. There should be no operative mortality to this class of cases providing the blood supply of the gut is protected and provided there are not complicating injuries to other intra-abdominal viscera.

The second class of injuries to the mesentery is where it is completely separated from the gut or the mesentery crushed and gangrenous but not separated. In these cases the blood supply to the gut wall is cut off without sufficient provision for a collateral supply. Each terminal vessel supplies its own definite area and other terminal vessels give little aid to that area or at least are too small a supply for that aid to extend far. LaJars says that where the surgeon thinks the vitality of the gut will not be impaired it should be watched for a time after the repair is made to make sure that the blood supply is sufficient, before the abdomen is closed.

Few cases of this kind have been reported. LaJars illustrates the injury and mentions two cases.

The only case I found which was of the same character as the one I report was by John F. Erdman of New York (Am. Jr. of the Med. Sci. Vol. CXXXIX p. 980). In his case there were two injuries. One in which the mesentery was crushed and gangrenous but not torn and a second in which the mesentery was separated from the gut. The gut was resected and anastamosis made with the Murphy Button.

Special attention should be called to the cord like constrictiton of both ends of the contused gut in that portion where the mesentry was only crushed and not detached. I did not notice any such constriction in the case I report.

Where more than three inches of mesentery is separated from the gut the area should be resected and an anastamosis made. I prefer a side union, although an end to end union of the gut may be made. In the side to side anastomosis care must be given to the blood supply. Mesentery should extend completely to the end of each portion. This necessitates a double layer of mesentery which is triangular in shape, which must be carefully folded and tacked down on itself in order that finally a smooth area will

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result. If the mesentery is simply separated from the gut and has no slit or fissure down into its substance it may be folded on itself and tacked down with a few fine catgut sutures. Any raw edges should be covered with peritoneum. Incidently all bleeding points in the detached mesentery must be ligated or caught by the sutures.

It is rare that a definite diagnosis can be made in these cases prior to opening the abdomen. There will be the symptoms of acute abdomen with the history of trauma. The shock will be in proportion to the amount of hemorrhage and the extent of the accompanying injuries.

Case No. 22697 I. S. Boy aged 15 in perfect health was run over by an automobile, the wheels of which passed over the abdomen at about the umbilicus. There were no marks of importance on any part of the body. The boy was picked up and taken to his family physicians, Drs. Allyn and Allyn of Waverly, Ill. By the time the doctors examined him he was beginning to have severe abdominal pain with rigid abdominal muscles. Recognizing that there was a serious intra-abdominal lesion he was sent to Passavant Hospital where I saw him about four hours after the accident. By this time the abdomen was board like with no point more tender than another. Shock was profound. Examination of urine and blood normal excepting 15,500 leucocytes. Thinking there was probably a ruptured viscus he was sent to the operating room and under gas-oxygen anesthesia the abdomen was opened in the median line. We first encountered free blood. This cleared away and the loops of small intestine examined; beginning at the cecum and going upward. At about the middle of the jejunum a loop was found from which the mesentery was separated for a distance of seven inches. While the intestinal loop showed evidence of contusion it was not perforated. This loop of gut was beginning to show areas which were becoming gangrenous. The vitality of the portion of mesentery involved was not impared. Eight inches of gut was excised, the ends closed and a side to side anastomosis made. The involved portion of mesentery was folded on itself and held in place by a few catgut sutures.

The position of the loop and the nature of the injury made it appear that the gut was on one side of the spine and the mesentery was caught between the wheel and the spine and in that way crushed off. The gut must have been pushed away by the impact, tearing itself loose from the mesenteric attachment. Only a few tags of mesentery were left attached to the gut.

This case illustrates the dictum that in every case of injury to the abdomen with marked symptoms there should be an exploration. It would be better to explore several abdomens where no lesion was found than to delay one with a lesion. The prompt recovery of such cases depends on how early it is explored. This case had hardly a serious symptom after the resection and made a prompt and complete recovery.

TEACHING CLINIC:

BRONCHIAL ASTHMA, PERNICIOUS ANEMIA, UNKNOWN FEVER

KARL KOESSLER, M.D.

CHICAGO

This lady is forty-seven years old. She has had asthma for fifteen years. She has lost weight and has gone from 135 down to 95 pounds.

She has smothering and weak spells, has headaches frequently, and pain under the eyes. Appetite good at times; other times, bad. She feels better when eating more. Occasionally she has pains in the lungs; but when asthma is bad she feels oppressed but has no pain. She is not able to take a deep breath. She has some pain over the heart. She has palpitations and has attacks of dizziness, has sick headache. She sleeps well except for the breathing. She gets up at night and runs to the door to relieve the difficulty in breathing. Complains of pain in the wrist joints and arms. At times she feels as though the hands will drop off.

Fifteen years ago she had influenza and has never been well since that time. The asthma began immediately after this illness.

Thirty-seven years ago she had an abscess opened. Had a dilatation of the uterus when a girl. Nose bone removed last winter. Typhoid at sixteen.

She was tested by Dr. McMichael for tuberculosis some years ago but found negative.

I examined the patient. She is a patient of Dr. Miller. The thing which I wish to add to the history is that we found a blood pressure 220 systolic and 135 diastolic. That, in itself, is a noteworthy finding in asthma, because while it is not the exception, the rule in asthma is that you have low blood pressure in bronchial asthma. In fact, there are three symptoms, which, if together, make a diagnosis certain; but that does not say that if you don't have more

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than one, you can not make a diagnosis of bronchial asthma.

These symptoms are attacks of dyspnea; second, a low blood pressure, usually low, due to capillary relaxation; third, eosinophilia in the blood.

When you find a patient with hypertension at the age of forty-seven, it is wise to make a careful study of the heart and of the blood vessels, to see if you have really to deal with true bronchial asthma.

It is just fifteen years ago that I reported at the Illinois State Medical Society in Springfield on three cases of what I then called egg-asthma. They were some of the first cases. I expounded at that time that asthma is a form of allergy or anaphylaxis. It is of importance that we group these patients into allergic asthma and non-allergic asthma. Subsequently skin tests were developed.

She has on each arm about seventeen tests. In the back, twelve and twelve.

Now, gentlemen, if you do this work, it has to be done completely or it is better not done at all.

If we make use of all the substances which we have at our disposal today as allergens, which are between 300 and 400, there are always more other substances possible to which we are not able to test them, like some individual house dust. But to make any statement regarding an asthma if it is allergic or not by making forty or fifty tests is not justified. You have to exhaust the possibilities and make a real study of the allergic factor of asthma.

If you wish you can simplify this thing by means of group testing, so that we do not have to make so many tests. To make forty or fifty individual tests does not enable you often to make the statement that it is an allergic or an infectious asthma.

In asthma, more than in any other disease, we are extremely anxious to have a history which goes back to infancy. Walker pointed out, very justifiedly, that most of the asthmas which come about in infancy are allergic asthmas. Why? It originates usually from improper weaning of the baby. You very often find that the child is sensitive to those foods which were given in large quantities when the child was taken from the mother's breast. Cow's milk, eggs, cereals, barley, wheat, rice. They are probably the most common foods to which a child is sensitive. But by no means must you adopt this as true in one hundred per cent of the cases. Very frequently we have an infant or a child of three, four or five years who has not an allergic asthma but in whom asthma dates back to a broncho-pneumonia, which the child had in the first year of its life.

In some way is is not at all excluded that a patient, even with a history of bronchitis for many years, which finally culminates in asthma, an infectious asthma, can not have an allergic asthma. It is not common but it occurs.

Now, what is the lesion in a patient with infections bacterial asthma? Of course, we have to differentiate there between a good many conditions. It is possible that we have a so-called bacterial asthma in which the substance which causes the broncho-spasm is not formed in the bronchi, but is formed actually in some focus of infection.

In a paper my associates and I published recently in the Archives of Internal Medicine, we brought, I believe, experimental proof that a good many bacteria have the faculty of forming in vitro at least substances which, in the experimental animals, will cause bronchial spasm.

Now, what we usually call attacks of asthma in the human is usually bronchial spasm plus exudation, swelling, hyperemia of the mucous membrane.

When we get a history like this lady represents, that she had an attack of influenza and secondary to this influenza her asthma developed, it is very probable that you have to deal with a condition which is very similar to the condition about which Dr. Hedblom just spoke, one of the most frequently associated factors in the pathogenesis of bronchial asthma on a bacterial basis, which led to the injury of the continuity of the mucosa, submucosa, and, even to some extent, to ulcer formation of the bronchi, so that there is a focus from which absorption takes place constantly.

A few years ago Dr. Huber and I published an article on the pathology of asthma, in which we referred to all the cases which had so far been reported in the literature and added six new cases. We found in some cases actually this ulceration of the bronchial mucosa.

Jackson and his associates in Philadelphia had some astounding and excellent results by treat-

ing the ulceration in the mucosa as you would treat an ulcer in the nasal mucosa. When the ulcer is healed the attacks of asthma cease. Unfortunately, when there are many multiple ulcers, the treatment is very difficult.

A few words about non-specific, non-allergic asthma. Etiologically, it is the only chance you have to use vaccines.

Some people will say this is probably un-specific treatment. Even if it is true that autogenous vaccines act unspecifically, since we are not sure of this, why not use those formed from an organism which is cultivated from the patient rather than to use a stock vaccine.

In a study which Dr. Moody and I made about sixteen years ago on the bacteriology of asthma, we pointed out that it is of the utmost importance that the vaccine contain besides the aerobic organisms the anaerobic organism. They break down protein much faster than streptococci and micrococci catarrhalis and the influenza bacilli.

We demand of our vaccine that it contains the chief organism of the aerobic and the anaerobic group.

In the last two years Dr. Maurer and I have used the injection of autogenous vaccines into the skin and not under the skin with very small doses. We believe we obtain much better results with this method than with the subcutaneous method. You have to guard your doses and be very careful not to increase too rapidly.

Outside of the specific autogenous vaccines you have to rely on unspecific treatments to give the patient relief and comfort until you accomplish a permanent benefit, if possible, with your specific treatment.

Just one word in connection with the new drug which we have all heard of, the Chinese drug Ephedrine. Use the hydrochloride and not the sulphate. It is best to use it in solution and not in tablets. Use a three per cent. solution and give the patient from twenty to thirty drops three to four times a day, depending upon the weight of the patient.

Very often the physician, if I may say such a thing, forgets, in the matter of drugs, with the exception of digitalis, where we have learned to think more of the weight of the patient, that weight of the patient has to be considered as much in the human being as in experimental animals.

In the laboratory we always figure out what the dose is per kilogram of weight; in the human we neglect that, we are more inclined to say "Twenty to thirty drops."

Ephedrin is a powerful drug and to a woman who weighs as little as this patient does, about eighty-five pounds, I certainly should not give more than three times a day twenty drops of the three per cent. solution.

The drug is not a substitute for adrenalin. Adrenalin is still the best drug which we have to stop paroxysms of asthma if they are severe. But since this drug (ephedrine) acts by mouth and can be taken in the absence of the physician, it is of great advantage.

There is just one warning I always make when I speak about asthma and I don't want to omit it here. That is, never combine, please, adrenalin with morphin. I have definite evidence that that is a fatal combination. These two drugs must not be combined. Think of the physiological action of them and you know why.

There are two other patients I want to show you. Since it is so late I will spare you the histories. I wish to have you look at the patients. Look at this very excellently nourished, well colored (white) lady. Look at this man. I don't know if you can see the color. But he has pallor. There is a slight cyanotic hue, and he is pale. Both have a form of anemia which is known as Addison's anemia. This lady has been sick for several years. She has followed the high vitamin liver diet since October of last year. She has gained more than forty pounds in weight. Her blood count, September 15, was 1,100,000, and her hemoglobin twenty per cent. Her white corpuscles 3,760. She was placed on the diet in October, and she has on May 4, 100,000 red, 7,050 white, and seventy-two per cent. hemoglobin.

Now, this gentleman. I told him that I would tell him things he must remember. He has an affinity for the chiropractic school of medicine and he has not followed any dietary instruction.

I have seen him only an hour ago for the first time.

Question: What do you have for breakfast,

The Patient: Eggs, breakfast food, a cup of coffee.

Question: What do you have for lunch?

The Patient: Potatoes, gravy. (Liver since a few weeks.)

Question: How often?

The Patient: Three or four times a week.

Question: What do you have for supper?

The Patient: Bread and butter——

Dr. Koessler: You remember what I said yesterday. If you examine the dietary history of the patient with pernicious anemia you find a positive dietary history in eighty per cent. of the case.

The average man or woman, never mind of what class, will not eat a diet which is sufficiently rich in vitamins to balance the blood regeneration properly.

Now, this man eats potatoes and gravy for lunch, and the average strong American man will eat coffee and rolls for breakfast and potatoes, meat and gravy twice a day, if he has a chance, a diet which does not contain sufficient vitamins. It is not a diet which contains sufficient of the substances to produce a normal balance between blood regeneration and blood destruction.

And so the result of this faulty diet is what I showed on the lantern slides yesterday in the experimental animal, an anemia which we call pernicious anemia.

Of course, associated with these things are the changes in the stomach. Both patients have achylia.

Minot and Murphy of Boston have published in August of last year the first report of forty-four cases treated with a diet rich in liver, with most splendid results.

Until three or four weeks ago I believed, on the basis of our experimental work at the University of Chicago and the treatment which we had done of 42 patients thus far, that the results of Minot and Murphy are ascribable to the fat soluble vitamins in the liver because the liver is the chief storage organ of fat soluble vitamins. But that is not the entire truth.

I still maintain that fat soluble vitamins are one of the most important factors, if not the most important factor, in the regeneration of blood in maintaining the balance between blood destruction and blood regeneration, which, as I said yesterday, amounts to about one hundred cubic centimeters daily. And Dr. McCollum of Hopkins is of the same opinion, excepting, however, that vitamin E in addition to vitamin A, another fat soluble vitamin, might be of primary importance according to him.

But Cohen and Minot have now isolated from the liver a product by chemical methods so that the product does not contain any known vitamins. We, therefore, must say that the liver, this marvelous organ which does so many things, contains something which has a fundamental relation to blood regeneration.

In his first articles Minot advocates a low fat diet. There is no reason for it. Since the fat-soluble vitamins are carried by such foods as butter, cod liver oil, cream and milk, if there is anything to the vitamin theory at all, it would not be wise to give a fat-poor diet.

The experimental evidence for the vitamin theory in pernicious anemia I have shown you yesterday. In our rats where we produced our anemia we used no meat at all. We did not give liver. You saw we produced a picture which is very similar to pernicious anemia. In order to cure the rats, in a good many cases, we feed them high vitamin diet and the blood in their picture comes back to normal.

Where I beg you not to forget the vitamin theory of pernicious amenia is in the feeding of a diet high in vitamin B, because we believe that the lack of vitamin B over a long period of years is related with the spinal cord symptoms of this disease.

As I pointed out, Goldberger has shown that lack of vitamine B is probably the chief cause of pellagra. You cannot distinguish a section of the spinal cord at a certain segment in an advanced case of pellagra from a section taken at the same height, the same segment, of an advanced case of pernicious anemia.

The liver is not rich enough in vitamin B to cover this requirement on B. You have to furnish vitamin B in the form of brewer's yeast and vegetables, which are especially high in vitamin B.

You see here a woman whom nobody today would ever think had pernicious anemia. And you see the man who is following his own idea about diets. He has been misguided. It is entirely up to him. It is not sufficient to eat a little bit of calf's liver two or three times a week to get well; that will not get him well. His is an absolutely inadequate diet.

PRIVATE PRACTICE IS AT STAKE*

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Mr. President and members of the Physicians' Fellowship Club of Chicago: I consider it a great honor to be asked to come here as your speaker today. I am not an alarmist but there are a great many alarming problems confronting the profession today, the solution of which will determine the future of private practice. The time has come for us to face the facts, make an honest survey of the situation, and set in motion the necessary machinery to correct those economic difficulties. We must work out our own salvation. I am going to be very frank in my discussion of the subject.

Private practice is at stake. Every attack upon the profession has been directed against the practice of medicine by the individual physician. Every piece of legislation directed against the profession has been aimed at the physician in private practice. Against him is aimed the combined forces of corporations practicing medicine. The insidious inroads of organized charity are also being felt by the private practitioner. The practice of medicine, in one guise or another, by the city, county, state, and national governments has affected no field save that of private practice. The green eye of every cultist sees only the patients of the private practitioner. The proposed exploitation of the profession in Chicago, by "Izzy" Braverman and his fellow musketeers, has for its objective the subjugation of private practice to the whims of a few thugs and gun-men. The most unscrupulous, the most malicious, and the most deadly of all attacks against the physician in private practice have been instigated, or personally directed, by traitors within the ranks of organized medicine. Private practice has been, and still is, the target for every shot fired at the profession.

Legislation directed against the profession punches private practice right between the eyes. Let us first consider certain national laws which affect the private practice of medicine. The provisions of the Narcotic Act mitigate against the man in private practice. They circumscribe his rights and then go a step further in compelling him to pay a tax for the privilege of alleviating human suffering. The stipulations of the Volstead Act, which has done more than any other damning force to substitute license for liberty in this country, provides an army of snoops and spies, sniffers and tasters, agents and business agents, to supervise the sale and distribution of both good whiskey and moonshine, and to levy upon the producer, the middle man and the consumer whenever the opportunity presents itself. This munificent Act of Congress says to the individual physician in private practice: "You may prescribe on an average of one pint of spiritus frumenti a day. You must not prescribe, under any circumstances, more than one pint of this medicine to any individual patient in any ten day period.'" No restrictions are placed upon the legitimate use of alcohol except in its use by the individual physician for the relief of his patients. We are admonished that the Prohibition Director is a specialist in the medicinal use of alcohol and spirits, and when he speaks it is with the voice of authority of a specialist. He says to you and me that we do not know what to prescribe for the sick man. He does. That's all there is to it. I wonder at times how long it will be before the red eye of some long eared reformer will focus itself upon sodium salicylate, ammonium chloride or neosalvarsan. This law, with the interpretation placed upon it by the director, affects only those men in medicine who are engaged in private practice. The Sheppard-Towner Maternity Act is paternalistic in principle and socialistic in direction. It invades the premises of personal rights, places the birth-room at the mercy of the political boss, and seeks to destroy that confidential relationship existing between the physician and his patient. Laws passed by Congress regulating the activities of the United States Veteran's Bureau have been a most wicked attack against a profession, which in the time of national emergency gave more than any other to the defense of their country. There is provided by this Bureau, for the former members of the service, free medical attention. This Bureau provides free medical and hospital treatment for every ex-service man, it matters not whether the malady was incurred before, during, or since separation from the service. This is a most contemptible piece of political trickery which aims at pauperizing the ex-service man for his

*Read before the Physicians Fellowship Club, Jan. 6, 1928.

service to his country. Those former members of the armed forces of this Republic who have been disabled by virtue of that service should be adequately taken care of by the country they fought to defend. All others, if they are financially able to pay, should pay for all medical services rendered them. Insofar as this illegitimate dispensing of charity on the part of the government is concerned, the profession is affected only as it concerns those members in private practice. These national laws have been passed by Congress and then turned over to their respective Bureaus, each one of which makes its own regulations, provides penalties for non-compliance, and enforces them. We have in Washington these various Bureaus, each vying with the others in the unreasonableness of their regulations and in the vindictiveness with which they are enforced.

Almost all states have further augmented the Prohibition Act and the Maternity Act by additional laws; the majority have made their own Acts even more drastic. In many states laws have been passed allowing cultists of every type and description to invade some field of medical practice. In every instance legislative experiments in the field of medicine have affected only the physicians in private practice.

We, in the state of Illinois, have been more fortunate in a great many respects than our confreres in some of the other states. We must not forget in this connection a determined fight directed by the President of the Illinois State Medical Society, the Editor of the ILLINOIS MEDICAL JOURNAL and the Legislative Committee of the Illinois State Medical Society, which defeated legislation intended to saddle the Sheppard-Towner Maternity Act upon the people of Illinois. The same men who so successfully defeated that paternalistic measure have rendered heroic service to the profession in securing the passage of The Medical Practice Act of the State of Illinois and in stopping adverse legislation in our state legislature. These real soldiers are entitled to the "Distinguished Service Cross" of the profession. The profession in Illinois has been blessed with a determined band of warriors who have unfalteringly carried the fight for justice in the law for the physicians in private practice.

Lay corporations practicing medicine have become vicious enemies of private practice. We have lay corporations who have taken over the practice of medicine insofar as it pertains to their employees. In some of these companies we find that every employee has a certain amount of money deducted from his pay to provide the funds necessary, the well man is compelled by this system to care for the sick. In other companies the employees are underpaid and are then "kidded" into believing that they are getting something for nothing in the form of "free" medical services. In either case the employees all pay, there is no question about that. If a spirit of fairness were present in these industries, the employees would be paid what they earn and allowed to go to their private physicians when in need of professional attention. In this same classification we have the situation as it occurs in many of our colleges and universities where an additional charge is added to the fees paid by the student body; here again we have the healthy being compelled to provide for the care of the sick. The students in these institutions are also being deprived of the right to go where they please should they require the services of a physician. Private practitioners are the only physicians affected by this arrangement.

We have other lay corporations organized for the express purpose of practicing medicine. The most notorious example of this group is the Public Health Institute. In its unethical conduct of practice, in the extent of its advertising to the laity, and in its cash returns the Public Health Institute makes the quack specialists of other days look like a bunch of pikers. No other quack institution ever spent money so lavishly for printer's ink. We find page advertisements appearing in the great daily newspapers of Chicago. An appeal is made to all who frequent the toilets in public buildings, in railway stations, in office buildings, and where not, where the printed notice of the wonderful achievements of the Public Health Institute has replaced advertisements for those old home remedies, OKey Specific and Knox-It. Up until this time we have been given to understand that the profession could do nothing as far as this monument to quackery was concerned. I know that companionate marriages are quite the thing today,

but I have not been able to convince myself that the solution of the problem of the Public Health Institute lies in a trial marriage between it and the Chicago Medical Society. The Public Health Institute has done everything possible to prostitute the practice of medicine.

Charity organizations, with that insatiable desire to pauperize everyone who comes within the pale of their influence, constitute a distinct menace to private practice. We have as a profession seen charity organize and we have seen organized charity grow rich in influence, in power, and in financial resources. These organizations have done some legitimate work. The attitude taken by most, if not all, charity organizations is that even though one is able to live in moderately comfortable circumstances he is still an object of charity as far as medical services are concerned. They seem to feel that disease and accident are conditions over which the individual has no control and that he should not be called upon to pay for medical treatment. Charity clinics are being maintained not for the poor but for all who come. The profession has always maintained the attitude that the person entitled to medical charity was the one who was an object of charity in other respects. This is fair. The deserving poor have always received consideration at the hands of the profession. We have always taken care of the sick in need, this is one of the heritages of the profession and we accept it as such. We do feel, however, that that type of charity which pauperizes the individual is a bad thing for society. The individual who is able to take care of himself should do so; he should pay his physician as well as his grocer. Rich organized charity is breathing its venomous breath into our communities and is casting its blight upon private practice.

The practice of medicine by the city, county, state and national governments in many instances operates to the detriment of private practice. At the present time we have a serious growing menace to private practice in the ever increasing activities of the Cook County Board in the enlargement of their public charity work. These activities are under the direction of Dr. Herbert L. Wright, of Berwyn, who hasn't a license to practice medicine in the State of Illinois. We have doctors doing public health work for the State of Illinois, for various cities and counties throughout the State of Illinois, who are not licensed to practice medicine in this state. All such "Doctors," practicing medicine in one phase or another, who are pursuing their professional work without the formality of license to practice medicine, constitute a very serious menace to private practice. I have never been able to determine just why physicians in many public positions should not be required to qualify for professional practice in the state in which they are carrying on professional work. This is a question upon which the profession must demand an answer. There is always an effort being made by the majority of public health officials to bite into what belongs to the man in private practice.

In too many instances, the dispensaries and hospitals of our medical schools constitute a distinct menace to private practice. It is well for us to keep in mind the fact that the great majority of the members of the profession are in private practice, these physicians are not dependent upon faculty positions to furnish them, directly or indirectly, with a livelihood. These men, for some considerable distance from our teaching centers, are compelled to compete with the medical schools. Here we have medical institutions eagerly vying with one another in building up large charity or semi-charity clinics, some making no charge, others having a small clinic fee, less in every instance than that which would be charged by the private physician, and none of them making any particular effort to care only for deserving charity. I am not unmindful of the fact that our teaching centers have contributed a great deal to the present high standards of the profession, yet they have done this with one hand clean and the other one dirty, they have educated the neophyte on one hand and have robbed the graduate of his patients on the other. There is enough legitimate charity in Cook County to furnish all the clinical material necessary for the Chicago medical schools, the rest belongs to the physicians in private practice. The value of the medical school to society is measured in terms of the ability of its graduates to practice good medicine. The medical school is primarily a teaching institution and not a dispenser of charity, its job is to graduate good doctors and not to pauperize any community. Our medical schools have lost their professional direc-

tion. We have today lay direction of medical education. Our medical schools must come back to direction by the profession. Our medical schools must appreciate again that they are a part of the profession and have definite obligations to it; they must be brought to face the fact that their greatest good to both the profession and to society can only come through private practitioners; they must be made to appreciate the fact that they have no place in the profession as corporations practicing medicine.

The exterior of the Chicago Physicians and Surgeons Economic League has all the vicious characteristics of a "racketeer" movement. These racketeers, having been appraised of our economic difficulties, see here an opportunity to capitalize the unrest within the profession and, under the guise of relieving the situation, to rob the physicians.

There is a reason for everything. There is a raison d'etre for this league. Irrespective of what may be said, there is a great deal more to this than "Izzy" Braverman and his fellow racketeers. Behind the curtain is a problem which reaches deep into the practice of medicine. It is found in the failure of organized medicine to adequately handle its economic affairs. The spirit behind this movement lies in the profession itself. The rank and file of the members of organized medicine have been "kidded" long enough, they have suffered too long from the indifference of their medical societies to this phase of the practice of medicine. This is a movement for relief from some of the unbearable circumstances which are drawing the rope tighter and tighter around private practice. In the body-politic relief for the masses seldom, if ever, comes from the top. It has long appeared as though this were true in organized medicine. This movement is the voice of protest. It must be heard.

The most vicious enemies of private practice are rascals within our own ranks. Every attack upon the profession finds intimately identified with it prominent members of our medical societies. When the Sheppard-Towner Maternity Bill was before our State Legislature, many of our so-called "leaders," coddled by professional lobbyists and welfare workers, spent more time and effort to secure the passage of this nefarious measure than they ever did for the enactment of legislation fair to medicine. These men addressed Women's Clubs and civic organizations to enlist their support against the profession. They went to Springfield as a part of a lay lobby to impress upon our State Legislature the necessity of passing measures in keeping with the spirit of the Sheppard-Towner Maternity Act. They are members in good standing of our medical societies. Many of these same men have since become officers in several professional societies.

On February 14, 1927, Arthur Dean Bevan, by his own admission a smart fellow, a "professor" Doctor, and a moral censor, under the latitude offered in the subject which he chose, prepared a paper which he read before the Annual Congress of Medical Education, Medical Licensure and Hospital, entitled "The Need of Teaching Medical Ethics." In Dr. Bevan there is a shining example of that class of "Holier Than Thou" self-styled "Professors" and "Leaders" of the profession, who are continually on the alert to parade themselves in an atmosphere of self satisfaction, who continually seek to impress the profession and the laity with a conceited sort of superiority-complex which no one is as cognizant of as are those principles themselves, that type of "specialists" whose feeling toward the general practitioner is measured in direct terms of the other man's inclination to send them referred work. Under the guise of expounding "The Need of Medical Ethics," the eminent surgeon, addressing a mixed audience of physicians and laymen, took advantage of his time and of his position to conduct a tirade against the profession which had honored him more than he deserved. Those assembled at that meeting were informed that the profession was in danger of being over-run with pick-pockets and bootleggers. Prior to the meeting, the "Professor" had provided newspaper reporters with copies of his address. In the *Chicago Tribune*, on the morning of the meeting, appeared an article in bold, black type telling the world that physicians were a band of thieves and a gang of bootleggers according to that eminent authority, Dr. Arthur Dean Bevan. In the transcript of the article which appeared in the February 26, 1927, issue of the *Journal A. M. A.*, the Editor had thoughtfully deleted those crucifying paragraphs. It was too late, however, for that pub-

licity hound had burned his bridges behind him. He admitted that he was the mouthpiece of authority of the American Medical Association and he wanted everyone to know it. He was uneasy until he saw his indictment of the profession published in the lay press. After reading the Doctor's article in the *Chicago Tribune,* and the revised edition of it in the *Journal A. M. A.,* I could not but agree with Dr. Bevan that there was a "Need of Teaching Medical Ethics." I was convinced, however, that the greatest need for such instructions was in the ranks of the faculties of our medical schools.

Still more recently we have had occasions to read articles in the lay press from the mouths of other medical "patriarchs" condemning the piratical practices of physicians in robbing their victims through the medium of exorbitant fees, and upbraiding them for being derelict in their duties. It has become entirely too popular a pastime for "prominent" men within the profession to berate and to belittle the efforts of more ethical physicians.

Gentlemen, we have men, elevated on the shoulders of their fellow physicians to high positions in the profession, who use that position to malign and belittle the work of those who had faith in them. We have men who publish to the laity the inference that the Doctors are a bunch of bootleggers and only they are righteous. The laity has been told ad nauseam, that the Doctor is a dispenser of charity and a damned poor business man. The public has been given to understand that every Doctor is a year-round Santa Claus, that his fee is always exorbitant, and that it is a matter of little consequence whether he is paid or not. These indictments and statements, which make the physician the subject of ridicule, have come in too many instances from men within our own ranks who sit pretty close to the top of the ladder, men, who in their scheme of self-aggrandizement, have lost sight of the fact that it is the profession which has given them their identity. Gentlemen, it is about time that we kicked the stool from under men of this type and made them appreciate that it is the profession, not the individual, which is great.

There has never been a nation, a cause, a profession, or an organization worth-while but what has had conflicts of opinion which have moulded its life and pointed its direction. These conflicts have been necessary for it to keep alive and to carry-on in the mission before it. History is a record of conflicts. Wherever there are active minds there must be differences of opinion. The history of this nation and of every nation, the history of this profession and of every profession, the history of every great cause is but the recording of its victories and its defeats. Whether it be on the field of battle, or in the debates on the floors of our legislative bodies, or in the effort to develop industry, or in the struggle to develop or reclaim national resources, or in the ever present turmoil between capital and labor, or in our own contest between life and disease, there is always the conflict of opposing forces. Where there are no conflicts an organization or a cause becomes impotent, it degenerates to the point where it is sexless and spineless, and, if it does not die, it exists only as the vassal of a more powerful force. Conflicts are the signs of activity and of virility. We need more conflicts in medicine in order that we may keep our feet on the ground and go forward in economic as well as scientific phases of practice.

I am glad that the Economic League appeared upon the horizon just when it did. A few years from now, at the rate we have been drifting, such an attack would be more formidable. I am glad that the directing genius is a notorious gangster; I am glad of his associates in other fields of endeavor. With such a sire this movement is destined to be short lived among men who work with their brains. We need a great many changes in medicine, these must come from within the profession and not at the instigation of a gang of hoodlums seeking to exploit the profession.

It sometimes requires a national crisis to unify a people. This may come in the nature of a great catastrophe or a war upon a common enemy. Just this situation faces the profession in Cook County today. We see here the profession battling against a most vicious enemy. When the smoke clears away, I pray that we will find a unified profession with a new spirit, possessed of that type of morale that is comparable only to the esprit de corps of a conquering army. "Izzy" Braverman has rendered a great service, he has brought us together. Let us direct the force and the militant determination of the aroused

profession to the handling of our economic problems.

I trust that we are approaching the dawn of a new day in the profession, the awakening of a dynamic force in medicine. We have stayed upon the defense until we have become the jest of the clown, the object of attack by every fake healer, the butt of legislative experiments, and now the proposed subject of exploitation by a band of gangsters. One of Napoleon's maxims of war was this, "A defense to be successful must be successful at all points. An offense to be successful need only be successful at one point." Many are the blows which have fallen upon the profession; in some instances no resistance was offered, in others the blows have been parried. Times without number we have been sold out by those who should have been the first to come to the defense of their profession; not all of our enemies have been from without. From all these attacks the profession has suffered. The incarnation of the profession stands there with torn sides and bleeding hands looking to us to defend Her. I know that in Her hours of supplication She must have offered up such a prayer as this, "God give the profession men; men who are masculine; men who have a spine; men in whose vascular systems flow an abundance of fighting corpuscles; men who are fearless and unafraid; men in whose hearts there is a fidelity to their profession which is akin to patriotism for one's country; men in whose souls are indelibly stamped the principles of service to the profession; men whose hearts are attuned to the problems of the average man in private practice." I believe that this prayer has been answered. I believe that the time is not far distant when our medical societies will physic themselves of those rascals within their own ranks, who, using membership as the cloak of professional respectability to cover up their underhanded tactics, have prostituted the profession for their own personal gain. Their professional standing has given these men their reputation, without it their status would be entirely different. We have men who must maintain their membership in organized medicine to keep up their inflated fronts, deprive them of that and they become at once more ordinary. I believe that the day is not so far away when the Chicago Medical Society will say to some of its members, "Get off the staff of that charity organization or get out of organized medicine"; it will say to certain other members, "Get off the faculty of that medical school or get out of organized medicine"; and it will say to a few others, "For that smart aleck bit of personal publicity attacking the profession which you had inserted in the lay press, you are expelled from membership." Then and not until then, will membership mean what it should mean. We must set our house in order. Then take the field against these enemies of private practice. We must carry the fight to the enemy.

We must change our source of timber for leadership in the profession. In the past we have spent entirely too much time delving about in the catacombs of the pseudo-aristocracy of the profession, and rescuing therefrom for the presidency of a medical society, or for the chairmanship of an important committee, a professional has-been whose greatest attainment is to occupy a prominent position and preen himself in an air of self-content. We will find our professional societies of the future directed by men whose hearts are attuned to the problems of the average man in practice, whose efforts for the common good of the profession will supplant personal ambition. The ultimate criterion for leadership must be, not what are a man's contributions to the literature but *How Does He Stand on the Problems of the Average Man in Practice?* It may be possible in some instances to find men in whom both of these attributes are present, but the leader of the future must be he who looks upon his position as an opportunity to be of service to the entire profession.

The enemies of private practice are active; they do not sleep. These attacks upon medicine, some of them very insidious, are a challenge to the loyalty every physician should have to his profession. Gentlemen, will you accept that challenge? The time is ripe, yes, rotten ripe, for a change in attitude on the part of our Medical Societies toward the economic problems of private practice. *We Must Go Forward in Our Scientific Endeavors, and at the Same Time Temper Altruism With Economic Salvation.* We must save private practice for the physicians of the future in order that American Medicine shall continue to maintain its place in the Sun.

THE COMPLICATIONS OF THYROIDECTOMY

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The treatment of exophthalmic goiter, or better thyrotoxicosis, which term will include both the true exophthalmic and the toxic adenoma, has become pretty well standardized within the last two years due to the admirable work of Crile,[1] Mayo,[2] Lahey,[3] Graham,[4] Richter[5] and others.

It is fairly well agreed at the present time that the proper treatment is thyroidectomy as soon after diagnosis as the condition of the patient will permit. It would, however, appear from the statistics of Crile, Lahey, Mayos, Richter, etc., that a thyroidectomy is a very simple operation with an attending mortality from .5% to 2.2% including all patients brought to operation. These brilliant results as undoubtedly true in the hands of the men above mentioned, but we must remember that there are many thyroidectomies performed daily by men who of necessity have not the same skill. The general mortality if it were possible to estimate would probably be much higher.

Little is written regarding the dangers and pitfalls which confront the surgeon on all sides both during the operation and after. If there is any surgical procedure that reqires a thorough knowledge of anatomy it is a thyroidectomy. Unfortunately, the science of anatomy apears to be a lost art today. The leading medical colleges have a tendency to skim over it superficially although the European schools emphasize anatomy much more than we do here in America. A brief review of the essential surgical anatomy of the thyroid will enable us to appreciate the dangers and complications which may arise during a thyroidectomy.

The thyroid gland is a highly vascular organ situated at the front and sides of the neck and consists of a right and left lobe connected across the middle line by a narrow portion called the isthmus. Normally it lies over second, third and fourth tracheal rings.

The lateral lobes lie under the sternohyoid and sternothyroid muscles and descend to the level of the sixth ring of the trachea. The inferior constrictor of the pharynx is beneath the gland. The thyroid gland is enveloped by the pretracheal fascia, and also possesses a capsule of its own. This fascia envelops the gland and its capsule, and from it posterior surface a layer is prolonged down onto the trachea which envelops the vessels coming to and leaving the gland.

The lateral surface is covered by skin, superficial and deep fascia, sternocleidomastoid muscle, superior belly of the omohyoid, sternohyoid and sternothyroid, beneath which lies the pretracheal fascia which encapsulates the gland. The great vessels and vagus nerve lie to the lateral side. The recurrent laryngeal nerve is in close relationship with the posterior capsule as it courses upward in the groove between the esophagus and trachea.

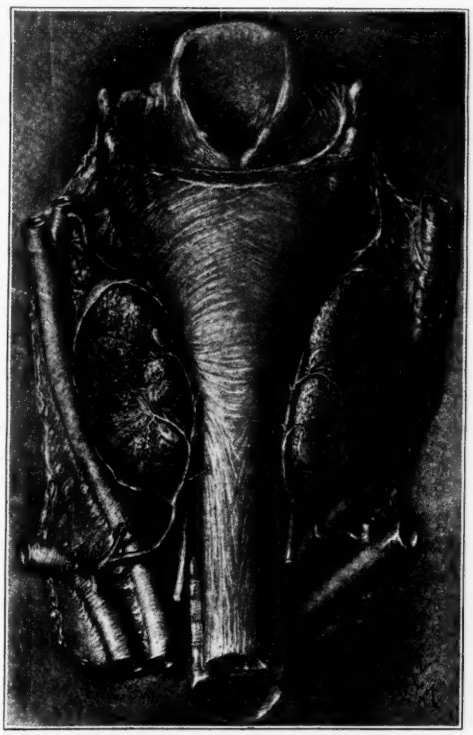

Fig. 1. Thyroids and parathyroids seen from behind.

The deep or medial surface is moulded over the underlying structures which are the thyroid and cricoid cartilages, the trachea, the constrictor pharyngis inferior and posterior part of the cricothyroideus and esophagus, the superior and inferior thyroid arteries and recurrent laryngeal nerves.

A third lobe, called the pyramidal lobe, fre-

quently arises from the upper part of the isthmus or from the adjacent portion of either lobe and ascends to the hyoid bone. The isthmus of the thyroid gland is developed from a diverticulum from the ventral wall of the pharynx in the embryo. The foramen cecum of the tongue is where the diverticulum grew out from the pharynx. From this foramen, a duct called the thyroglossal duct may be found leading to accessory gland masses about the hyoid bone. Cysts may occur in this duct simulating goiter.

The arteries of the thyroid gland are the superior and inferior thyroids and sometimes the thyroid ima. The superior thyroid is the first branch of the external carotid and comes off just above the bifurcation. It ascends first and then runs inward, forward and downward onto the anterior surface of the upper pole.

The inferior thyroid artery, a branch of the thyroid axis crosses behind the common carotid artery and internal jugular vein about the level of the seventh cervical vertebra and enters the gland from the side. It is usually in front of the recurrent laryngeal nerve.

The thyroid ima enters the gland from below and comes up on the trachea to the isthmus from the innominate artery. This vessel is only present in about one-third of the cases.

The veins are in three sets; the superior, middle and inferior. The superior and middle veins pass outward to empty into the internal jugular. Accessory veins go to the jugular, subclavian or innominates. The inferior thyroid vein passes down in front of the trachea to empty into the innominate vein. There are usually two parathyroid bodies on each side about the size of a grain of wheat, the superior and the inferior. They are small brown bodies lying in the meshes of loose connective tissue forming the outer capsule of the gland. The superior parathyroids are usually found at the junction of the middle and upper thirds of the posterior edge of the thyroid gland opposite the cricoid cartilage. The inferior is near the lower pole, near the point of entry of the inferior thyroid artery.

Practical application of the surgical anatomy is evident as we consider the various complications that may arise during a thyroidectomy. Hemorrhage is probably the most frequent accident encountered during operation, the degree depending upon the skill of the operator and the type of operation performed. A common cause of hemorrhage is the slipping of a ligature from the superior pole. This can usually be avoided by anchoring the ligature with a needle thus making a suture ligature. This procedure is advisable especially when catgut is used. If a free tie is desired silk is to be preferred as it is not as likely to slip as catgut. The pole should be thoroughly isolated before ligatures are applied. Annoying bleeding may be had due to the rupture or cutting of the middle thyroid vein which leaves the gland from the lateral border and is large and thin walled. This vein should be clamped and ligated first in order to obviate the danger of hemorrhage. Probably the most common source of bleeding comes from the inferior thyroid artery which is a large and rather short vessel, entering the gland from the side. Sometimes the vessel is not easy to find and may be cut before being recognized. Retraction may occur and the field become filled with blood. It is during such a mishap that injury to the recurrent laryngeal nerve may occur due to promiscuous clamping in an effort to secure the artery. The best way is to make temporary pressure with a sponge in order to secure a dry field, then suddenly release the sponge and the spurting vessel can be seen and clamped individually. A suture ligature or a free tie is then made. Hemorrhage may also be encountered during the delivery of a substernal lobe, the tension and pulling incident to the delivery causing the rupture of thin walled veins. This complication can be avoided by first grasping the vessels and also by first separating the upper attachment of the lobe, thus allowing it to rise easily with a slight pull from above. If local anesthesia is used, having the patient cough will sometimes aid in the delivery of a substernal lobe. Secondary hemorrhage can be prevented in most cases by securing absolute hemastasis before closure. If a tendency to ooze is observed, it is wise to insert a little narrow gauze packing. Two small cigarette drains brought out on the lateral side of the superficial strap muscles will aid in draining the blood through the dressings and thus warn the nurses and internes of hemorrhage, whereas if the wound is sutured tightly, the hemorrhage might be allowed to go unnoticed until a large amount of blood collects in the tissues. Controlling secondary hemorrhage

after a thyroidectomy is a dreaded experience not to be desired.

Probably after hemorrhage, injury to the recurrent laryngeal nerve is the most frequent complication. In a series of 100 cases, Richter[3] notes that "Temporary injury probably due to dragging on or pinching the nerve has occurred a number of times, usually clearing within from one to three months, and leaving no after-effect."

The recurrent laryngeal nerve has no relation with the upper part of the thyroid lobe, and if the surgical capsule is consistently pressed away from it in a downward and backward direction in the direction of the esophagus the nerve will be peeled off and away from the goiter along with the other structures connected with the posterior capsule. It has only been within the last few years when the importance of removing most of the gland has been appreciated that injuries to the recurrent laryngeal nerve have become so frequent. The point of greatest danger is where the nerve lies closest to the gland, that is near the point of entrance of the inferior thyroid vessels. At this point and for a variable distance above it the nerve is in intimate relationship with the posterior capsule, and by tugging, tearing, deep clamping, etc., one can easily injure the nerve. As this unfortunate complication usually occurs during active bleeding from the inferior thyroid vessels during attempts to clamp the bleeding vessel, it is obvious that isolation and ligation of the vessels before or just after their entrance into the gland will tend to prevent this type of injury. In our zeal to remove the greater part of the gland it is easy to expose the nerves which later may become involved in the scar tissue and produce hoarseness. Actual cutting of the recurrent laryngeal nerve is inexcusable if proper precautions are observed in leaving the posterior capsule. Many surgeons (Crile,[1] Lahey,[3] Richter[5]) leave a thin portion or strip of thyroid tissue directly above the region of the inferior laryngeal nerve and thus not only prevent involvement of the nerve but preserve the parathyroids as well. This procedure is to be advised but care must be exercised not to leave too much glandular tissue as recurrences are common with marked regeneration of thyroid tissue. Recurrences are directly proportional to the amount of thyroid tissue left (Richter[3]) and care must be exercised to remove all but a thin layer of each lobe next to the posterior capsule on either side of the trachea.

If local anesthesia alone or combined with nitrous oxide and oxygen analgesia, after the method of Crile, is used it is possible by having the patient talk, while working near the lower pole, to recognize the proximity of the nerve by a change of voice, and thus obviate serious injury to the nerve. If traumatized, respirations will become stertorous with a slight inspiratory crow, which may persist for a variable time after awakening. Usually, however, if the offending forceps or ligature is removed the breathing returns to normal within a few minutes. However, if the nerve has been severely traumatized, aphonia or hoarseness will be noted, which condition will persist for several weeks. If the nerve is caught in the scar during the healing process hoarseness may develop several days or weeks later and may persist for months or even become permanent. According to Pemberton[5] the most common site of injury to the nerve is not posterior to the capsule, but in the groove between the mesial surface of the resected lobe and the lateral wall of the trachea. If the nerve is cut the hoarseness may be permanent.

Possibly the next most serious danger to be avoided is collapse of the trachea, with interference with respiratory exchange. The cause of this condition may be due to the support of a thin walled trachea being suddenly removed during a thyroidectomy, or the sudden straightening of an augulated or compressed trachea after the removal of an adherent lobe. Usually the cause is obscure, the collapse occurring during the course of the operation. Rotation with compression of the trachea is likely to occur in the elevation of the lobe in recurrent goiter unless the gland has been freed from the front of the trachea. In such cases the lobe is attached to the trachea by firm adhesions and failure to free these before attempting to elevate the lobe may result in partial or complete collapse of the trachea. In such cases immediate administration of oxygen under pressure will overcome the condition as a rule (Crile[7]). The anesthetist should be prepared at all times to give the patient oxygen under positive pressure should a collapse of the trachea develop. If this procedure does not completely relieve the condition a tracheotomy should be done at once. The tracheotomy tube should be of sufficient length to

overcome the collapse which may be some distance from the thyroid cartilage. A collapsed trachea once seen will never be forgotten. A loud inspiratory crow is heard which persists until relief is instituted. If proper measures are not given, fatigue and cyanosis soon develop and a fatal termination is inevitable. It is far better to do a tracheotomy early, than late. A transverse small opening should be made between the rings and as soon as the obstruction is removed, the trachea may be closed.

Another common complication incident to thyroid surgery is tetany due to injury or removal of the parathyroid bodies. This condition is brought about most commonly by removal of the parathyroid tissue at the time of the operation. However, trauma, or subsequent interference with their blood supply by edema or contraction of the scar tissue in the field of operation will also produce a latent tetany (Richter[7]).

Parathyroid tetany can be avoided by leaving the posterior capsule of the thyroid gland and in addition a thin layer of thyroid tissue covering it. According to Richter[8] in spite of the greatest care, injury to the parathyroids may occur during thyroidectomies because of the variation in the number and location of the glandules.

Halstead[9] in 1907 described a method of avoiding injury to the parathyroid glands, by lifting the gland and ligating the vessels within the capsule drawing the lobe towards the opposite side.

According to Richter[7] parathyroid damage occurs much more frequently than is usually supposed after goiter operations. In his series it was demonstrated in 14% of the cases. Most of his cases were latent with very mild symptoms which were transient.

The onset of symptoms may occur at any time between six hours and three or four months after operation. If the symptoms appear within six to twenty-four hours after operation it is usually due to the operative removal of the major part of the parathyroid bodies or to a marked interference with their blood supply.

If the tetany appears later, that is, after forty-eight hours it is usually due to edema of the surrounding tissues. When delayed until three or four months after a thyroidectomy it is due to interference with the blood supply of the parathyroids by contraction of scar tissue.

The first symptoms are circumoral pallor, and tight glossy skin, parasthesia, numbness, tingling in the extremities, a drawing sensation about the mouth and nose. Trousseau's sign which is a spasm of the hand or foot when compression is applied to the arms or legs, is usually present. Chvostek's sign which is a spasm of the muscles of the side of the face caused by tapping over the facial nerve, is quite constant in parathyroid injuries and appears early as a rule.

Spasms of the hands and feet occur in severe cases and are sometimes preceded by a slight stridor or crow, which seems to be due to some difficulty of breathing.

The treatment depends upon the degree of parathyroid deficiency. Mild cases unless carefully looked for will escape unnoticed. If serious injury has not occurred the symptoms will soon disappear as the body adapts itself to the loss of parathyroid secretion. However, it is wise, as soon as the first symptoms manifest themselves to begin active treatment. Thyroid extract seems to be of value and should be given in 2 gr. doses twice daily. Parathyroid is recommended by Crile, in ½ gr. doses three times a day. Richter[7] uses Collips Parathormone in extreme cases with excellent results and has discarded all other forms of parathyroid treatment.

Calcium lactate is the most reliable drug we have and when given in 20 grain doses every four hours usually produces marked improvement. If tingling is present the calcium lactate can be increased as high as 40 grains every four hours. Fluids should be pushed, and if the spasms become alarming, morphin in ½ grain doses should be given, 25% magnesium sulphate can be given hypodermically 20cc every five or six hours for three or four days (Crile[10]) if necessary to control the spasms. After they are controlled calcium lactate should be continued as long as any symptoms persist.

It would appear from the above formidable array of complications and dangers incident to a thyroidectomy that the operation is one associated with the gravest danger, which should only be considered where the indications are extreme. Nothing could be further from the truth, as a thyroidectomy today should be one of our safest operations. However, it is only through appreciation of the dangers which may possibly arise and the manner of their avoidance, or

prompt treatment that we will be able to keep the mortality down to its present low figure or further reduce it.

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IMPORTANCE IN RECOGNITION OF EARLY PEPTIC ULCER*

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Introduction. To anyone coming in contact with a large number of gastro-intestinal cases it must indeed be a source of disappointment to see the many people so poorly diagnosed and inadequately treated. This is especially true among the patients suffering from peptic ulcer, either gastric or duodenal. This, I am sure, is due almost entirely to the lack of proper appreciation of the possible pathology, to the lack of proper evaluation of the diagnostic methods, or as it too frequently seems, simply to an indifference to anyone who complains of that vague, but frequently employed term, "Indigestion."

An affiliation with any large clinic, hospital or out-patient department will at once make apparent the great number of such gastro-intestinal derelicts and force upon us the question of the why and wherefore. No one as yet has presented a satisfactory explanation of the cause of the chronic ulcer and until such etiology is established it is likely that no specific therapy will be evolved. It would seem rational, therefore, to assume that if the ulcer could be recognized in its incipiency something might be accomplished in the way of preventive and active treatment which would, to some extent, lessen the great number of chronic ulcers.

*Read before Section on Medicine, Illinois State Medical Society, May 31, 1927.

The recognition of the duodenal or gastric ulcer with any certainty has come only in the last twenty-five years. It is interesting, however, to note that John Abercrombie in 1830 reported several cases of duodenal ulcer and remarked: "The leading peculiarity of disease of the duodenum, so far as we are at present acquainted with it, seems to be that the food is taken with relish, and the first stage of digestion is not passing out of the stomach in from two to four hours." Bucquoy in 1887 was apparently the first after Abercrombie to suggest the possibility of a diagnosis being made during the life of the patient, and it is only within recent years that anything like a general understanding has come in the diagnosis. Since the publication of the papers by Moynihan in 1905 and W. J. Mayo in 1908 and the splendid observations and teachings of the late Dr. B. W. Sippy and others, it has gradually been recognized that the ulcer is much more common than was formerly supposed, that it can be recognized clinically and diagnosed with a greater degree of accuracy. This advance has been due to the surgeon, the advent of the x-ray in diagnosis and to a more careful clinical interpretation brought about by the cooperation of the surgeon, the internist and general practitioner.

Most writers on this subject have been concerned with the chronic ulceration, pointing out the essential differences between the acute and chronic ulcers. They are different but the thing I would like to make clear is that the chronic ulcer had a beginning, that it was not always chronic, although it may always have had present that which would make it chronic instead of acute. The term chronic has been so instilled into our minds that we too often insist upon the chronicity and periodicity being present before we are willing to consider a diagnosis of peptic ulcer.

Pathology. Acute ulcers following infections or passive hyperemia or other causes tend to heal rapidly and leave no serious after effects. Ulcers may occur from certain chemical poisoning and even serious hemorrhage result, yet the lesion be only microscopic in size. These often heal readidly.

Our knowledge of the pathological picture of the early ulcer has been much advanced by the relative increase of material obtained from the surgical clinics doing more radical gastric resec-

tion. Moynihan says that up to 1911 he had operated upon but one duodenal ulcer during or just after the first attack. This was an erosion of the mucosa and submucosa without infiltration of the surrounding tissue. Interestingly enough, this patient presented a "typical ulcer syndrome." The early ulcer varies in size from a microscopic erosion to that of a centimeter or more in diameter. It may be shallow and without induration or it may appear punched out, in either event often surrounded by a healthy mucous membrane. These are the types of ulcers which have produced the ulcer syndrome and which cannot be demonstrated at the operating table. There is little or no induration present and consequently cannot be palpated by the surgeon; in fact, may not be revealed by the x-ray.

Karsner finds a fairly widespread acute gastritis, which may be superimposed on a chronic gastritis. Hemorrhage is frequent in the exudate of the earlier ulcers and may occur in other places in the mucosa and submucosa. Chronic gastritis is a common but not constant accompaniment. The early ulcers as described above may be multiple as in the chronic type.

Judd had described a somewhat similar pathology in his cases of duodenitis. MacCarty says in discussing duodenitis that the external appearance of the serosa is indistinguishable from that seen in association with small ulcers. The chief difference between the chronic and the acute ulcer is the thickening of the mucous coat. The piling up of connective tissue at the edges with funnel-shaped crater, associated more or less with complications of varying types constitutes the chief points of pathology in the chronic ulcer.

There is only a relative difference between the acute or early and the chronic ulcer. Many ulcers heal, as evidenced by scars in the stomach and duodenum, but undoubtedly a definite number of the acute ulcers, by reason of certain influences, becomes the chronic indurative type.

Etiology. Casual mention is here made of the etiology of the peptic ulcer only as it will bear on the subsequent management of the patient.

No one cause may be considered as wholly responsible for ulcerations in the stomach and duodenum. Two chief predisposing factors seem to be worthy of mention, the disturbances of the syn pathetic nervous system resulting in spasm of blood vessels and local muscles, and some peculiarity in the blood vessel distribution to the stomach and duodenum. Some writers believe that the weight of the stomach as it is suspended at the duodenum also has an influence upon the frequent ulceration of this organ.

Rosenow has found streptococci predominating in a large proportion of duodenal ulcers examined and was able to produce the lesion in animals. Recently Rivers has been able to produce hemorrhagic ulcers in a similar manner. Trauma must be considered as a definite factor. The ulcer in the antrum is being constantly injured by the food and secretion as it is forced against the pylorus. This same factor plus that of spasm is also present in the duodenum.

The digestive action of the acid gastric juice, added to a continuation of infection or a poor local blood supply from endarteritis or thrombosis will tend to produce a chronic ulcer out of an acute lesion. Early ulcers in the region of the antrum are, by reason of their location, unfavorably situated for healing because of constant irritation from both food and gastric juice.

Symptoms and Diagnosis. The very first symptom of a peptic ulcer may be mild and transitory. Hemorrhage may be the first definite evidence as pointed out by Miller and more recently by Rivers. These hemorrhages may come from an acute erosion so slight as to be overlooked by the surgeon and to require the aid of the microscopist for confirmation. The latter writer inquires if perhaps these acute erosions are not the forerunner of the chronic ulcer.

When a peptic ulcer produces clinical manifestations certain subjective symptoms are present which are so characteristic as to suggest a probable diagnosis. The most important of these symptoms relate to the feeling of epigastric distress. This distress is variously described as burning, gnawing, aching, gas, fullness or cramp-like.

Since the history is so very important in all gastro-intestinal disorders we are in the habit of incorporating within the history a "typical day" story—which reveals, of course, something of a composite picture, but nevertheless, helping to show the relationship of distress to the time of eating, relief and rest. This is invaluable in the chronic ulcer and is particularly helpful in the consideration of the diagnosis of early ulcer. The distress as it appears in the chronic, definitely proven, ulcer will be something as follows:

No distress is likely present in the A. M., a. c. unless there is retention of food in the stomach over night. There is no distress while eating or for one-half hour or more after. Then about 9 to 10 A. M. it begins and will last a few minutes to an hour or more, depending upon the severity of the symptoms and position of the lesion, but in any event, relieved by food. The noon meal brings relief. No distress will appear for one or more hours after eating and then it will continue for a variable time. If the ulcer is so situated as to interfere with the emptying of the stomach—i. e., and ulcer either duodenal or prepyloric, the distress usually comes on later after meals and continues until the next meal to be promptly relieved by eating. On the other hand, when the ulcer is on the lesser curvature of the stomach it may not continue until the next meal, but it is relieved just the same if food is taken between meals. As a rule there is little or no distress in the evening after supper. If it does appear it will be about 9 P. M., and of the same character as during the day. Later on in the course of the disease the distress is very likely to awaken the patient at 1 to 2 A. M. This, at times, will become very severe and vomiting of very sour acid water may occur. This, too, is associated with pyloric obstruction, and, of course, usually due to duodenal ulcer.

The patient has learned to take soda, soda mint, or crackers and milk for the distress and is conscious of a very prompt relief. His distress will continue for a few days to two or three weeks and then spontaneously or by aid of rest, soft diet and soda, it will disappear for weeks to months or more. There will be a definite periodicity noted which is quite characteristic of the chronic peptic ulcer. The distress then may be said to be absent when the stomach is empty and usually appears not earlier than a half hour after eating and will be relieved by the taking of adequate alkali, by emptying the stomach either by vomiting or aspiration.

By keeping these facts in mind one may later test out the distress, observing the relief and recurrences of the distress and in this way have a much more accurate understanding of the patient's condition.

The patient with duodenal ulcer often has a very abrupt onset. Careful and diligent search of the history reveals no early symptoms suggestive of a so-called "pre-ulcer" stage. The patient is perfectly comfortable, has eaten well, has a good appetite, says he could eat anything, when suddenly he becomes conscious of an epigastric burning or hurting. This distress manifests itself often from the very first with clock-like precision. It has many of the important characteristics of a later and thoroughly proven duodenal lesion. Does this early attack represent the so-called "ulcer sickness" mentioned by some authors or the submucous hemorrhages in the duodenum recorded by Judd, or is it a small early ulcer, perhaps superficial and not even indurated, being subjected to constant reinfection from a specific focus and the continued insult from the digestive juices in the stomach, that later produces the chronic ulcer? It seems very significant that in studying the individual attacks from the very earliest, they will be alike in all general details. Any specific variation in the picture will be due entirely to the advent of complications that arise or general progress of the condition.

Gastric ulcers may not have quite the same exactness in the picture as the duodenal but for general discussion it presents such definiteness that no one can fail to recognize the great similarity. This is true in the early stages as well as in the later. Here again I have great difficulty in recognizing a "pre-ulcer" stage from an analysis of the early history of gastric ulcers.

Here then we have an individual often in the early twenties who is suddenly conscious of an epigastric distress, burning, soreness, or perhaps a hunger sensation or appearing as a fullness and bloating. This distress has such definiteness, recurs with such precision and is so similar day by day, that attention is at once attracted. The distress will continue for several days to several weeks and then disappear for weeks or months and then recur as before. Sometimes it never returns. Occasionally it will reappear after several years. Often a diagnosis is made by the patient of indigestion or gastritis and concurred in by the physician. "Upon superficial investigation the distress due to a diseased gall-bladder, appendix or irritable colon may resemble the distress of an ulcer. When the distress picture is subjected to careful analysis, however, exploratory operation should seldom be required for the purpose of differentiating these processes" (Sippy). To make diagnosis of early ulcer would seem to be heresy, judging from the infre-

quency of it. Chronic appendicitis or cholecystitis, indigestion and hyper-chlorhydria are terms so frequently used that we wonder why the apathy in accurate gastric diagnosis. Moynihan says that his duodenal ulcer patients came to him after an average duration of seven and one-half years suffering. This experience is concurred in by practically all observers. Statistics of any large clinic will reveal much the same picture.

When the individual with such early history is investigated it will be found that he presents all of the test-out niceties found in the chronic ulcer picture. It is incumbent upon the investigator that he weigh all the tests with utmost care. Any incompatibilities present must be explained. The patient who complains of gas or other vague epigastric distress which has a definite relation to food taking must be looked upon with great suspicion.

The physical examination in the very chronic ulcer is likely to reveal little except such as is due to the complications. Evidences of anemia; masses due to periduodenitis or perigastritis, visible peristaltic waves indicative of obstruction may be found, but the early stage is much less likely to be associated with these complications, although they may occur. Little, therefore, will be found by examination to aid in the direct diagnosis.

The gastric analysis is the next step in the procedure after the history taking. Except where there is distinct contraindication, the tube should be passed. The amount of free-acid present will at best only be suggestive of a diagnosis. No one may now make a diagnosis of ulcer because of an excessively high acid finding. On the other hand, one will hesitate before making a diagnosis of ulcer in presence of a free-acid of less than twenty. And certainly clinical experience will not warrant a diagnosis of peptic ulcer in continual absence of free acidity. If the total amount of gastric secretion is greater than normal it will be suggestive of continued secretion, or of pyloric obstruction.

The essential finding, therefore, will be to determine an adequate acidity.

Examining the stools of an ulcer patient on a meat free diet for a few days may or may not reveal occult blood. It should be made routine, however, because it may be the first evidence of gastro-intestinal bleeding and aid greatly in the final differentiation between malignancy and ulcer. In fact, the finding of blood may be the only evidence of a latent ulcer.

The x-ray examination is one of the most important procedures in the diagnosis, yet it must not be relied upon to the exclusion of all other methods. This statement would seem to be superfluous, and yet, in an extremely large number of instances, the final diagnosis is allowed to rest with the roentgenologist. Fortunately, the great majority of ulcers are revealed by the fluoroscope or plates and this is especially true of the chronic ulcers or in those ulcers associated with craters or with marked amount of spasm. One should hesitate to diagnose an ulcer in the absence of x-ray findings unless the clinical proof outweighs all other evidence.

Now and then one has an opportunity to study an individual carefully who has run the gauntlet of x-ray with a negative report, removal of a chronic appendix, removal of adhesions and then continues to have distress. It is conceivable that the x-ray findings were entirely negative, as I have no doubt they often are in the incipient stage, but the criticism to be offered is the absolute dependence upon the roentgenological report.

May I make this summary in the diagnosis? The early stages of peptic ulcer are similar to the late stages and only varied by reason of the complications present or progressive changes in pathology; that the x-ray may or may not reveal any evidence; that physical examination and laboratory tests often fail to produce direct evidence; that the accurate history taking and subsequent test-out observation will be invaluable in final analysis of the case.

Treatment. In view of the variety of possibilities of both predisposing and exciting causes of the ulcer, it is highly important that a thorough search should be made on the individual who complains of a gastric distress which has a suspicion of ulcer and should the suspicion prove an actuality, the search should be exhaustive to reveal the underlying cause.

In view of the importance placed upon the work of Rosenow by present day workers all infections should be sought for and removed. It is often difficult to evaluate the importance of any one focus of infection unless there has been definite history of infection prior to or even suggestive of precipitating the present gastric trouble, but in the event of such close relationship

whatever focus seems to be incriminated should be removed.

Anemia, exhausting disease and deficient diets have been suggested as predisposing to the production of ulcer, therefore these conditions must be thoroughly studied and attempt made to combat them.

Moynihan has said that the dietetic and other regime instituted for the average ulcer patient is entirely too perfunctory. Rigid schemes of management are said to be better avoided. Yet how much variation is there in the average ulcer patient which makes it impossible to follow a definite diet and medical plan? To individualize all patients is to have no concrete method. All must have individual care but the physician must have a plan no less definite than the surgeon who does a gastroenterostomy.

Patients should be hospitalized, if possible; otherwise, they should be sent home to bed for a period of ten days to three weeks. If in a hospital, a diagnosis will be made with much more certainty, the greatest aid given to healing the ulcer, and, especially important, the patient taught to manage his diet for the coming year. The Sippy plan of treatment is followed with occasional modifications as deemed necessary. Emphasis is placed upon the control of the gastric acidity and upon the necessity for the taking of soft foods which produce the minimum trauma to the ulcer area.

Often the circumstances of the patient will not permit of bed rest and in that event the dietetic scheme is varied, but experience will not justify the ambulatory plan as a routine. The outlook for ultimate cure is not nearly so good as where bed rest is instituted. This applies to both early and late ulcers, but it is especially true of the early peptic ulcer where our chances to avoid the necessity for surgery at a later time depends upon our early care. It must be remembered that the early ulcer is heir to all the complications that the chronic ulcer is, such as hemorrhage, perforation, perigastritis and periduodenitis, as well as hypersecretion. This latter complication must always be looked for, since it has as much to do with the interference in healing as any one factor. Stomach aspiration should be done always to determine if the stomach is emptied before retiring and also the amount of secretion present at midnight. This continued secretion which is present through the night will often defeat the most careful dietetic routine followed during the day. One must be familiar with the secretory and motor disturbances of the stomach to make the most out of the medical management.

The chronic ulcer is difficult to heal, often impossible, and it is for that reason especially that we should treat the early cases thoroughly in their incipiency.

We should thoroughly impress upon the patient the importance of following a careful regime for a long time, not days or weeks, but months and even years sometimes. Smoking should be limited, exercise restricted and strong coffee, condiments and alcohol forbidden. A follow-up care is imperative, for in that way one is able to watch the progress of the individual case, make changes in the general management or advise surgical intervention at a much earlier date should it be deemed advisable.

CONCLUSIONS

In diagnosing the early ulcer one is assuming a great responsibility since the early recognition means a greater likelihood of curing the lesion. Furthermore, since the ulcer syndrome may seem to be mimicked by other abdominal disturbances, intragastric and extragastric, as well, great care must be exercised in drawing a final conclusion. The early carcinomatous ulcer may simulate a peptic ulcer, or the irritable colon and chronically infected gall bladder may, to the casual observer, also suggest the ulcer syndrome. However, if one will keep in mind the possibility of peptic ulcer in all cases of gastro-intestinal disorders, take a history with such care that will untangle the various epigastric distresses, remembering that the early ulcer differs from the chronic one only in chronicity and in proportion to the complications present, and to properly evaluate all clinical, laboratory and x-ray data, then will he avoid the many mistakes now hidden under such terms as dyspepsia, gastritis and indigestion. And finally, having recognized the ulcer in its incipiency, managing it with a rational regime, insisting upon a follow-up care, you will have performed a service to the individual that will be invaluable.

25 E. Washington St.

DISCUSSION

Dr. Snorf, closing: I take it that the paper I read was sufficiently long to justify hurrying now. There are just two things I would like to mention:

First of all, regarding differential diagnosis. I intentionally avoided it because it is in itself a long subject and it was not my intention to bring out that phase.

I was sure there might be some misunderstanding regarding the term acute ulcer. Of course, there are many acute ulcers that occur spontaneously. But I believe there are some of those ulcers which, by reason of certain conditions present in that individual or by reason of the location of the ulcer, may later produce a chronic one.

The acute ulcer is a term applied to a lesion of sudden onset often manifesting itself as an erosion which by reason of the causative factors will heal relatively rapidly. I believe, however, that there are some of those ulcers which either because of certain conditions present in the individual or due to the location of the lesion will later produce chronic ulcers. These latter lesions have had a beginning and the quicker we can recognize the ulcer the better it is for the patient.

Regarding management one must necessarily individualize the treatment, but the large number of ulcers, in my experience, present much the same general characteristics, and, to individualize in the sense that you treat all patients different is to have no scheme of management whatever.

Whether we are to operate or treat the patient medically is a point of view developed by what the patient presents and his subsequent progress. It seems to me that surgery is seldom indicated for a patient with a relatively early ulcer, unless it be one that has perforated.

MAN EATS SMALL FRACTION OF TOTAL FOOD SUPPLY

Yonkers, N. Y., Aug. 10.—Burning 8,900,000,000,000 tons of coal, 8,900 times as much as the world produces in a year, will release about as much energy as contained in the sunlight captured annually through the production of plant foods. Of this huge total, the human race uses less than 0.2 per cent, according to an estimate by Dr. John M. Arthur of the Boyce Thompson Institute for Plant Research here.

Every day each one of the 1,750,000,000 human beings on the earth consumes about 2,000 calories of food. Even meat comes indirectly from plants. The human race is therefore dependent on photo-synthesis, the process by which the plant uses sunlight to form food. The total consumption of food during a year by man amounts to about 1,200,000,000,000,000 calories. All of the other animal life, vertebrate or invertebrate, large or microscopic, on the globe are estimated to consume about six times this amount.

FINDS TOOTH-BRUSH PYORRHOEA PERIL

London, Aug. 20.—The old family tooth-brush is again under indictment with none less than Dr. F. D. Donovan, surgeon dentist to the royal household, leading the attack.

Practically no tooth-brush in current use is free from germs, declared the guardian of the royal molars in a recent report to the medical journal Lancet. He has examined bristles from hundreds of them, including his own, under the microscope with disturbing results.

While pyorrhoea is not actively caused by the unclean brush in Dr. Donovan's estimation, he nevertheless believes that it is at the root of 90 per cent of the cases now prevalent in the civilized world. Keeping brushes immersed in a one to twenty solution of carbolic acid when not in use is the only practical method he has found of keeping them sterile. This is hard on the brushes and fine for the manufacturers, he admits, but is the only remedy he can see at the present time to check the prevalence of the infection.

PROMPTED FROM THE BACK SEAT

The driver of a Ford sedan, who was plainly out of his element in city traffic, attempted to turn around in the middle of a block, and was side-swiped and upset by a hook and ladder fire truck on its way to answer a call.

Striding over to the overturned vehicle, a traffic officer poked his head through the broken window and demanded, "What do you mean by blocking traffic like this? C'mon outta there; you're pinched!"

"You let him alone!" said a female voice from the back seat. "How did we know them drunken painters were going to run into us?"—Goblin.

UP TO DATE MARY

Mary has no little lamb,
Like she had long years ago.
But she has a pair of calves,
That she delights to show.

They go with her to school today,
As faithful calves should do,
Where Mary draws a teacher's pay,
For imparting knowledge true.

Ye pedagogues of other days
Would deem her calves too shocking,
But Mary says it always pays,
To buy a high-priced stocking.

And Mary wears expensive gowns,
That are very light and airy,
Not so showy for the cost,
But they show a lot of Mary.
Boy! Page Daddy Browning!

Lanning G. Rooke,
Royal Arcanum Bulletin.

A CURE FOR INSOMNIA

McGraw complained of sleeplessness and was told to consult McNabb who had found a sure cure. "Is it a fact," inquired McGraw, "that you have found a cure for insomnia?" "Ay," replied McNab, "I ha'e a bottle an' a glass at my bedside. If the first glass

disna' work, I tak' anither, an' a third. After that I dinna care if I sleep or no'."

ONLY RECENTLY MARRIED

The street-car conductor's change was running short. A young mother with her baby in her lap handed him a half-dollar.

Conductor: "Is that the smallest you've got?"

Young Mother: "Well, I've only been married a year!"—*Medical Pocket Quarterly.*

THE APPLE A DAY

It was about eight in the evening. He met a friend on the street and stopped for a moment's conversation. Casually, he noticed that one of his friend's hands encompassed a large red apple.

"What's the idea of the apple?" he inquired.

"I'm just going down to call on a doctor's wife," was the reply.

ALL OF ONE KIND

Policeman: "Judge, this man is arrested for gambling and being drunk."

Drunk: "Your Honor, 'Man's inhumanity to man makes countless thousands mourn.' I'm not as debased as Swift, as profligate as Byron, as dissipated as Poe, or as debauched as—"

Judge: "That will do. Thirty days, and officer, take a list of those names and run them in; they're as bad as he is."—Wash. & Lee Mink.

EMBARRASSING TO SAY THE LEAST

A child was teasing the kitten, when her mother remonstrated:

"Phyllis, the next time you hurt that kitten I'm going to do the same to you; if you hit or pinch it, I shall hit or pinch you. If you pull its ears, I shall pull yours."

Silence for a moment, then: "Mummy, I pulled its tail."

SOUNDS WE CANNOT HEAR!

"You make me so angry," stormed Mrs. Biggs after the company had left. "Why do you insist on sitting on the piano stool all evening? Everybody knows you cannot play a note."

"Neither can anybody else while I'm sitting here," explained Mr. Biggs, placidly.

—*Florida Grower.*

THE REASON FOR THE SHOWER

"Why do they always give a shower for a girl who is going to be married?"

"Merely a quaint old custom, my boy, to symbolize the beginning of a reign."

CLEVER DEFINITION OF ALIBI

"Rastus, what's an alibi?"

"Dat's provin' you wuz at a prayer meeting whar you wasn't, in order to show dat you' wasn't at the crap game whar you wuz.'—Montreal Star.

LIMITED BRAIN CAPACITY

"They say he's wandering in his mind."

"That's all right. He won't go far."—Pomona Sagehen.

News of State

MARRIAGES

JULIUS ADLER to Miss Celia Mildred Keener, both of Chicago, June 3.

MILTON H. CARRIG to Miss Louis Kerz, both of Chicago, May 24.

SIGMUND S. TASHMA, Zeigler, Ill., to Miss Jane Levin of St. Louis, June 23.

PERSONALS

Dr. John A. Gardiner has resigned after many years' service as health officer at La Grange Park.

Dr. R. A. Hanna, Peoria, was elected president of the Alumni Association of Keokuk Medical College at the reunion in Keokuk, Iowa, June 8.

Dr. Harold D. Palmer, Iowa City, Iowa, has been placed in charge of the laboratory at the Rockford Hospital, Rockford.

Dr. Ludvig Hektoen was the guest of honor at the annual banquet of the Pacific Northwest Medical Association, Tacoma, July 5; the subject of his address was "How Medical Knowledge Grows."

Dr. John C. Dallenbach, Champaign, has been appointed a member of the board of the Outlook Sanatorium to succeed Dr. Charles B. Johnson, who was killed in an interurban accident May 31.

Dr. Philip F. Gillette, Elgin, has been appointed to the staff of the Elgin State Hospital. Dr. Gillette formerly was a member of the staff for about eight years but has been in private practice in Elgin for the last four years.

Dr. Carl H. Wilkinson has resigned as coroner of De Kalb County and has accepted a position in Chicago as house physician for a group of hotels.

At the joint meeting of the Monroe and Randolph County Medical Societies at Paris, Missouri, July 10th, Dr. Harold Swanberg of Quincy gave a talk on "The Practical Uses of Radium in Uterine Hemorrhage," illustrated with lantern slides.

NEWS NOTES

—The DeWitt County Medical Society met June 22 at Farmer City; Drs. Don Deal and Samuel E. Munson, both of Springfield, spoke on "The Acute Abdomen" and "Cardiac Lesions," respectively.

—At the annual picnic of the Peoria County Medical Society, June 29, Dr. Charles H. Mayo, Rochester, Minn., was scheduled to speak on "Relation of the Sympathetic Nervous System to Disease," and Dr. Charles P. Emerson, Indianapolis, on "Chronic Arthritis."

—Smith College awarded the honorary degree of doctor of science, June 18, to Edna L. Foley, superintendent, Visiting Nurse Association of Chicago, in recognition of her work in the field of public nursing; only a few others, among whom are Madam Curie and Dr. Alice Hamilton, have been thus honored by Smith College.

—The Cook county board is reported to have appointed Dr. Chester H. Warfield, Ann Arbor, Mich., as director of the roentgen-ray unit at Cook County Hospital, which has just been remodeled at an expenditure of about $25,000. Five rooms have been added for examinations and an additional room set aside for roentgen-ray therapy. The unit is said to have a capacity of 150 patients in twenty-four hours.

—Contrary to custom, pneumonia was almost as prevalent during May this year as in April. According to the state department of health, a sharp decline nearly always occurs in May in Illinois. The prevalence of influenza this spring is given as the probable cause of the unusual amount of pneumonia. Although the influenza epidemic was mild, it seems definitely related to the rise in the incidence of pneumonia. The number of cases of pneumonia reported in the first four months of 1928 was 55 per cent greater than in the same period of 1927. The disease was not confined to any particular area of the state.

—The Educational Committee is planning to contribute several articles to the Bulletin of the Chicago Department of Health. The Bulletins carrying these articles will bear the caption that the issues were prepared under the auspices of the Educational Committee of the Illinois State Medical Society.

Radio talks on the following subjects will be given over WGN during the next few weeks at twelve o'clock noon:

Hay Fever.
Care of the Eyes.
Swimming as a Cause of Ear, Nose and Throat Infections.
Why Have Diphtheria?
Care of the Skin.
Is Your Child Ready for School?
Mental Health.
Sunshine and Health.

Chicago physicians are scheduled to give health talks before the Northwest Town Kiwanis Club, the Maywood Lions Club, and the Streator Rotary Club.

Deaths

Frank H. Achatz, Chicago; Chicago College of Medicine and Surgery, 1914; member of the Illinois State Medical Society; aged 54; died, July 8, of septicemia, as the result of a scratch on his arm received in a fall on the sidewalk.

John M. Auld, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 74; died, July 6, of brain tumor.

Matthew F. Bozinch, Chicago; University of Moscow, Russia, 1890; Chicago College of Medicine and Surgery, 1912; aged 63; died, July 11, of thrombosis of the coronary artery and angina pectoris.

John R. Flexer, Joliet, Ill.; University of Pennsylvania School of Medicine, Philadelphia, 1886; aged 65; died suddenly, June 29, of heart disease.

Zephaniah S. Foulon, East St. Louis, Ill.; Missouri Medical College, St. Louis, 1887; on the staffs of the Christian Welfare Hospital and St. Mary's Hospital; aged 66; died, June 30, of myocarditis.

John W. Jeffries, Waltonville, Ill.; American Medical College, St. Louis, 1879; aged 83; died, June 16, of senility.

George Frederick Ruppert, Elgin, Ill.; St. Louis University School of Medicine, 1908; member of the Illinois State Medical Society; veteran of the Spanish-American War; aged 56; on the staff of St. Joseph's Hospital, where he died, June 22, of carcinoma of the pancreas.

Charles D. Ryerson, West York, Ill.; Medical College of Ohio, Cincinnati, 1881; aged 74; died, June 14, of cerebral hemorrhage.

Ralph Beedle Scott, Venice, Ill.; Beaumont Hospital Medical College, St. Louis, 1898; member of the school board and president of the Venice State Bank; aged 63; died suddenly, June 9, of heart disease.

Edward F. Shaffer, Grayslake, Ill.; Central College of Physicians and Surgeons, Indianapolis, 1889; aged 67; died, June 5, of cerebral hemorrhage.

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